CURRICULUM VITAE

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http://www.centronast.com/archives/27

INFORMAZIONI PERSONALI

Data di Nascita	5 Aprile 1954
Luogo di Nascita	Roma
Nazionalita'	Italiana
Residenza	Piazza delle Muse 7, Roma

TITOLI DI STUDIO

[1977] *Laurea in Fisica cum Laude*, Università degli Studi di Roma La Sapienza, nel gruppo prof. Edoardo Amaldi, "*Massa mancante nell'universo e buchi neri",* relatori Prof. Remo Ruffini, Prof. Guido Pizzella.

ESPERIENZA PROFESSIONALE

[2007 - oggi] *Professore Ordinario in Fisica della Materia*

[2013 - oggi] *Direttore Centro NAST* (Nanoscienze, Nanotecnologie, Strumentazione), Centro Interdipartimentale dell'Università degli Studi di Roma Tor Vergata (47 afferenti)

[2012] *Visiting Professor* presso la *Compact Pulsed Hadron Source* (CPHS), *Department of Engineering Physics, Tsinghua University* (Pechino, Cina)

[2010] *Visiting Professor* presso la *School of Physics & Engineering Sun Yat-Sen University* (Guangzhou, Cina) e la *Shandong University Institute of Crystal Materials*

[2007-2013] Vice-Direttore Centro NAST (Nanoscienze, Nanotecnologie e Strumentazione), Centro Interdipartimentale dell'Università degli Studi di Roma Tor Vergata

[1998-2007] *Professore Associato in Fisica della Materia* presso Università degli Studi di Roma Tor Vergata

[1985-1998] *Ricercatore* presso Università degli Studi di Roma Tor Vergata

[1983-1984] *Ricercatore* presso Divisione Scienza dei Materiali, ENEA Casaccia

[1984-1988] *Visiting Scientist* presso la sorgente ISIS *Spallation Neutron Source* (*Rutherford Appleton Laboratory*, UK), 2 Borse CNR - NATO

[1984] *Visiting Scientist* presso IPNS, *Intense Pulsed Neutron Source, Argonne National Laboratory* (Illinois, USA), Borsa CNR - NATO

[1981-1983] *Visiting Scientist* presso il LINAC *Harwell, Materials Physics Division, A.E.R.E. Harwell* (Oxfordshire, UK), Borsa CNR

[1980-1981] *Borsista della Fondazione Bordoni*

PUBBLICAZIONI

Oltre 150 lavori di ricerca, articoli di rassegna (Allegato I)
Oltre 180 comunicazioni su invito, seminari e colloqui a conferenze nazionali, internazionali, scuole e corsi di dottorato. Tutor di circa 20 tesi di dottorato in Fisica.

Sum of the Times Cited: **1924**
Average Citations per Article: **13.45**
h-index: **24** http://scholar.google.it/citations?user=EY3AFq0AAAAJ&hl=en

ONORIFICENZE SCIENTIFICHE

[2011] *Fellow, Institute of Physics (UK)* - "In recognition of personal contribution to the advancement of physics as a discipline and a profession"

APPARTENZA A SOCIETÀ SCIENTIFICHE E ASSOCIAZIONI PROFESSIONALI

Società Italiana di Fisica (SIF)
American Chemical Society (ACS)
European Physical Society (EPS)
Institute of Physics (IOP)
School of Neutron Scattering "Francesco Paolo Ricci", SoNS
Sociedad Española de Tecnicas Neutronica (SETN)

INCARICHI DI CONSULENZA SCIENTIFICA E INCARICHI DIRETTIVI

a) Esperienze di Consulenza Scientifica presso Istituzioni di ricerca nazionali e internazionali

[2013-oggi] *Esperto scientifico del CNR* nella Commissione di coordinamento per la spettroscopia di neutroni del CNR

[2012-oggi] *Esperto scientifico dell'ANVUR* per i progetti di ricerca nell'ambito per il Panel per le scienze fisiche

[2012-oggi] *Esperto scientifico del EPSRC (Engineering and Physical Science Research Council),* UK, per la valutazione di progetti di ricerca e di dottorato in UK.

[2011-oggi] *Presidente del Comitato Tecnico Scientifico del Consorzio COIRICH* (Infrastruttura di Ricerca Distribuita per la diagnostica dei materiali di interesso storico artistico), www.coirich.it

[2011-oggi] *Esperto scientifico del CNR*, con delega del presidente e con funzioni di coordinatore per l'iniziativa ESS Italia (www.ess-italia.it) per le iniziative italiane della Infrastruttura di ricerca ESS (*European Spallation Source*)

[2011-oggi] *Esperto scientifico del STFC (Science Technology Facility Council),* UK, nel *Review Committee - Facility Access Panel* (FAP 5) della sorgente di neutroni ISIS (UK)

[2011-oggi] *Esperto scientifico del MIUR* nel Panel di Area Scienze Fisiche dei PRIN

[1990-oggi] *Portavoce del CNR* per i programmi italiani relativi all'utilizzo della sorgente di neutroni ISIS (UK), nell'ambito di quattro accordi di ricerca internazionali del CNR stipulati con l'omologo ente inglese, attualmente denominato STFC (*Science Technology Facility Council*).

[1994-2013] *Esperto scientifico del CNR* nella Commissione di coordinamento per la spettroscopia di neutroni del CNR

[1994-2012] *Esperto scientifico* del CNR nell'organismo *Round Table on Neutron Sources* (NMI3) della Comunità Europea (FP3-FP7)

[2010-2111] *Esperto scientifico del CNR,* con delega del presidente, nel 'Tavolo di Concertazione MIBAC-MIUR"

[2009-2011] *Esperto scientifico del CNR*, con delega del presidente, nel Panel MIUR "Roadmap Italiana Infrastrutture di Ricerca–*e coordinatore* Gruppi Tematici: Scienze Sociali e Umane Energia, Scienza dei Materiali e Facilities Analitiche, Scienze Fisiche e Astronomia

[2008-2011] *Esperto scientifico del STFC (Science Technology Facility Council),* UK, nel *Review Committee - Facility Access Panel* (FAP 5) della sorgente di neutroni ISIS (UK)

[2008-2011] *Esperto scientifico del EPSRC (Engineering and Physical Science Research Council),* UK, per la valutazione di Progetti di ricerca e di dottorato in UK.

[2010-2011] *Esperto Scientifico della Regione Lombardia* per i progetti di ricerca regionali

[2008-2011] *Esperto scientifico del Department of Energy* (US), nel *Review Committee della Spallation Neutron Source*, *Oak Ridge National Laboratory (ORNL*) per le proposte di *Neutron Scattering Science*

[2009-2010] Esperto scientifico con ruolo di coordinatore per conto CNR nel Comitato di Valutazione per le Scienze Fisiche (*Panel Physical Sciences*) (Allegato II)

[2008-2010] *Esperto scientifico* per ESS Bilbao (Spagna) nel *International Advisory Board ESS Bilbao*

[2002-2009] *Esperto Scientifico del MIUR* per Panel di Area Scienze Fisiche (CIVR)

[2006-2008] *Esperto scientifico del STFC (Science Technology Facility Council),*UK, nel *Review Committee - Facility Access Panel* (FAP 5) della sorgente di neutroni ISIS (UK)

[2005-2007] *Esperto scientifico per Oak Ridge National Laboratory (ORNL*) nel *Novel Instrumentation Think Tank*.

[2000-2002] *Esperto scientifico,* con ruolo di componente, nel *Science Advisory Board* di *Neutron Research Laboratory* (NRL) *Studsvik* – Svezia

[1994-1998] *Esperto Scientifico* nel Comitato di Consulenza per le Scienze Fisiche del CNR, dove ha svolto il ruolo di segretario scientifico

[1996-1999] *Esperto scientifico per* OECD MEGASCIENCE FORUM nel NEUTRON SOURCES WORKING GROUP Panel B: *International cooperation in the development of neutron instrumentation and data evaluation*

b) Esperienze Direttive presso Università e Enti di Ricerca:

[2013-oggi] Responsabile per L'Università degli Studi di Roma Tor Vergata (nomina Rettorale) per la materia delle Infrastrutture di Ricerca e delle reti nazionali e transnazionali e della formazione di eccellenza

[2013-oggi] Direttore Centro NAST (Nanoscienze, Nanotecnologie e Strumentazione), Centro Interdipartimentale dell'Università degli Studi di Roma Tor Vergata (47 afferenti)

[1999-oggi] Direttore del NOTIZIARIO NEUTRONI E LUCE DI SINCROTRONE", rivista del CNR, http://neutronielucedisincrotrone.cnr.it ISSN: 1592-7822m

[2007-2013] Promotore, co-fondatore e Vice-Direttore Centro NAST (Nanoscienze, Nanotecnologie e Strumentazione), Università degli Studi di Roma Tor Vergata

[2005-2008] Componente del Consiglio di Amministrazione dell'Università degli Studi di Roma Tor Vergata

ATTIVITÀ DI TRASFERIMENTO TECNOLOGICO E SPIN OFF

[2010-oggi] *Socio di SVILUPPO CULTURA* s.r.l., *spin off* finanziato dal MIUR, http://www.sviluppocultura.it

COMITATI ORGANIZZATIVI DI CONFERENZE

[1982-oggi] *Chair person* (di *Scientific Committees*) e/o componente in comitati organizzativi di numerose conferenze e scuole internazionali (oltre 35)

PARTECIPAZIONE A COMITATI EDITORIALI DI RIVISTE SCIENTIFICHE

[2010-oggi] Componente dell'*Editorial Board* della rivista scientifica *ISRN Condensed Matter Physics* http://www.isrn.com/journals/cmp/editors/

ATTIVITÀ DI VALUTAZIONE

a) ATTIVITÀ DI VALUTAZIONE SCIENTIFICA DI PROGETTI RICERCA:

CA ha svolto e svolge valutazioni di progetti di ricerca per conto di istituzioni accademiche e enti di ricerche di Austria, Belgio, Canada, Germania, Italia, Olanda, Russia, Spagna, Svezia, Svizzera, Inghilterra, Stati Uniti, ad esempio per Consiglio Nazionale della Ricerche (I), Commissione Europea, ESPRC *(Engineering and Physical Science Research Council*, UK), *ESS Bilbao*, *Georgia National Science Foundation* (Georgia), *National Science Fundation* (US), *New Eurasia Foundation* (Russia), MIUR (I),

Regione Lombardia (I), *Studsvik* (S).

b) ATTIVITÀ DI VALUTAZIONE SCIENTIFICA PER RIVISTE

CA ha svolto e svolge valutazioni (*peer review*) per numerose riviste: *American Chemical Society: Journal of Physical Chemistry, American Physical Society: Physical Rev*iew e *Physical Review Letters*, *Journal of Chemical Physics*, *Insitute of Physics*, ISRN *Condensed Matter Physics., Meas. Sci. Technology*, *Europhysics Letters, Molecular Physics, Nature, Nature Materials, etc.*

c) ATTIVITA' DI VALUTAZIONE IN COMMISSIONI DI CONCORSO

CA ha esperienza significativa nel reclutamento di ricercatori. CA ha ricoperto il ruolo di commissario in numerosi concorsi universitari per il reclutamento di borsisti, assegnisti, ricercatori, professore associati e ordinari per il settore FIS/03 (Fisica della Materia), e in numerosi concorsi interdisciplinari del CNR per l'arruolamento di personale CTER, ricercatori, I Ricercatore, Dirigente di Ricerca e Direttore di Istituto CNR, per i profili FIS/03, FIS/07.

COLLABORAZIONI DI RICERCA INTERNAZIONALI (breve selezione)

[2013-oggi] Prof Loh Kian Ping, National University of Singapore, Singapore, *Proton dynamics in superheated graphene-water-pockets*

[2013-oggi] David Manolopoulos, University of Oxford, Department of Chemistry, *Direct Measurement of Competing Quantum Effects on the Kinetic Energy of Heavy Water upon Melting*

[2011-oggi] Prof C. K. Loong, Sun Yet Sen University (China), *Inelastic neutron scattering in supercritical water*

[2011-oggi] Prof J. Y. Wang and X. Hu, Institute of Crystal Materials, Shandong University, Jinan, Shandong, China – *crystal materials*

[2011-oggi] Dr C. Salztman, University College London (UK) - *Single particle dynamics of amorphous ice*

[2011-oggi] Prof Giulia Galli, University of Chicago (US), Insitute of Molecular Engineering, *The quantum nature of the OH stretching mode in ice and water probed by neutron scattering experiments*

[2010-oggi] Prof R. Car, University of Princeton, (US) - *Proton quantum dynamics*

[2008-oggi] Dr C. Frost, *ISIS Neutron Facilitye* (UK) - *Irradiation techniques, neutron technologies with MeV neutrons and realization of ChIPIR beamline*

[2007-oggi] Dr A. I. Kolesnikov, SNS, *Oak Ridge National Laboratory* (US) – *Inelastic Neutron scattering of disordered materials*

[2007-oggi] Prof I. Anderson, SNS, *Oak Ridge National Laboratory* (US) - *Application of neutron scattering to cultural heritage*

[2000-oggi] Prof G. Reiter, University of Houston (US) - DINS *scattering in water in bulk and confined materials*

[1985-2012] Dr J. Mayers, *ISIS Neutron Facility, Oxfordshire (UK)* - DINS *techniques and neutron technologies with eV neutrons on VESUVIO beamlines*

[1981-1990] Prof Colin Windsor (Material Physics Division, Harwell Research Centre, Chilton, UK) *CQS techniques and ND for stress analysis in materials*

ATTIVITÀ DI RICERCA

CA coordina un gruppo di ricerca composto da 2 ricercatori, 2 assegnisti, 2 dottorandi, 1 borsista.

INTERESSI DI RICERCA

Il focus del suo lavoro è prevedere, convalidare, e comprendere le proprietà della materia, attraverso lo sviluppo e l'applicazione di tecniche di diffusione e spettroscopia di neutroni.

Proprietà strutturali dei liquidi semplici biatomici (H_2, Cl_2, Br_2, I_2, HCl, HBr, HI).
Proprietà dinamiche di singola particella in fluidi e solidi molecolari, quantistici e semiclassici: atomici (^{3}He, ^{4}He e miscele ^{3}He+^{4}He, Xe), molecolari: (H_2, D_2) e miscele (H_2+D_2), acqua in fase normale e metastabile, in *bulk e* confinata in nanopori.
Dinamica di sistemi solidi a legame idrogeno (H_2O, H_2SO_4, H_2S, HCl, HBr e HI).
Teoria dello scattering di neutroni agli eV
Progettazione e realizzazione di tecnologie e strumentazione per *scattering* di neutroni presso reattori (DBSS) e sorgenti pulsate (CQS, PRISMA, TOSCA, VESUVIO, e.VERDI, ChIPIR)

Nel periodo 1985-2014 CA ha progettato e realizzato circa 110 proposte di ricerca sperimentali di diffusione di neutroni presso le linee di fascio dei Reattori Triga (Casaccia, I), PLUTO (UK), DIDO (UK), LLB (F), ILL (F), HFIR (US), delle sorgenti a spallazione ISIS (UK) e SNS (US). Nella maggior parte di queste porposte CA ha svolto il ruolo di *Principal Investigator* (PI).

ATTIVITÀ DI RICERCA NEL SETTORE DELLA STRUMENTAZIONE E TECNOLOGIE DI NEUTRONI TERMICI:

1. **realizzazione di esperimenti** di struttura microscopica nei liquidi **e di strumentazione** presso il diffrattometro di neutroni a 2-assi del Reattore TRIGA (ENEA Casaccia, I), 1980-1981.
2. **realizzazione dello spettrometro CQS,** installato nel 1983 presso la sorgente pulsata di neutroni HELIOS ad Harwell (UK) per la misura di eccitazione collettive nei solidi.
3. **progettazione e realizzazione dello spettrometro PRISMA,** (PRISMA - *A unique phonon spectrometer*, **C. Andreani**, U. Steigenberger, C. G. Windsor *Europhysics News* **21**, 147 (1990)), installato nel 1986 presso la sorgente pulsata di neutroni ISIS,
4. **realizzazione del diffrattometro DBSS,** installato nel 1982 presso il Reattore PLUTO ad Harwell (UK) finalizzato allo studio delle tensioni residue, tessiture e all'*imaging*/tomografia 3D in materiali per l'ingegneria (*Neutron diffraction methods for the study of residual stress fields,* A. J. Allen, M. T. Hutchings, C. G. Windsor, **C. Andreani**, *Advances in Physics* **34**, 445 (1985), citato 237)
5. **realizzazione dello spettrometro TOSCA,** installato nel 1997 presso il ISIS sorgente di neutroni a spallazione (UK): (TOSCA: a world class inelastic neutron spectrometer, S. F. Parker, C. J. Carlile, T. Pike, J. Tomkinson, R. J. Newport, **C. Andreani**, F. P. Ricci, F. Sacchetti, M. Zoppi*, Physica* B241, 154 (1998)).

ATTIVITÀ DI RICERCA NEL SETTORE DELLA STRUMENTAZIONE E TECNOLOGIE DI NEUTRONI AGLI EV E AI MEV:

6. **progettazione e realizzazione dello spettrometro VESUVIO (**VESUVIO: *the double difference inverse geometry spectrometer a*t ISIS, J. Mayers, J. Tomkinson, T. Abdul-Redah, W.G. Stirling**, C. Andreani**, R. Senesi, M. Nardone, D. Colognesi, E. Degiorgi*, Physica B* **350**, 659 (2004)**)** e dello **spettrometro e.VERDI (***"Recent developments of the e.VERDI Project at ISIS",* T. Abdul-Redah**, C. Andreani**, A. D'Angelo, G. Gorini, S. Imberti, J. Mayers, R. J. Newport, A. Pietropaolo, N. J. Rhodes, E. M. Schooneveld, R. Senesi, M. Tardocchi, J. Tomkinson*, Physica B***350**, 837 (2004)**)**, installati entrambi ad ISIS, rispettivamente nel 1997 e nel 2002. Gli strumenti sono finalizzati allo studio delle proprietà dinamiche di fluidi quantistici, complessi e a legame idrogeno, e delle eccitazioni magnetiche ad alta energia (*Measurement of momentum distribution of light atoms and molecules in condensed matter systems using inelastic neutron scattering,* **C. Andreani**, D. Colognesi, J. Mayers, G. F. Reiter, R. Senesi, *Advances in Physics*, **54**, 377 (2005)).
7. **progettazione e realizzazione di strumentazione per l'*imaging* (radiografia e la** tomografia 3D) con neutroni termini e epitermici (eV) nei materiali di interesse storico artistico e per l'ingegneria, lo studio delle proprietà strutturali, tessiture e tensioni residue. CA ha sviluppato tecnologie per *imaging*/tomografia 3D in materiali di interesse storico artistico nell'ambito del progetto Europeo *ANCIENT CHARM: Analysis by neutron resonant capture imaging and other emerging neutron techniques: new cultural heritage and archaeological research methods* (http://ancient-

charm.neutron-eu.net/ach). Alcuni dei risultati di questo progetto sono descritti nel lavoro *A non destructive stratigraphic and radiographic neutron study of Lorenzo Ghiberti's reliefs from Paradise and North doors of Florence Baptister*, G. Festa, **C. Andreani**, M. P. De Pascale, R. Senesi, G. Vitali, S. Porcinai, A. M. Giusti, P. Kudejova, R. Schulze, L. Canella, M. Mühlbauer, B. Schillinger and the Ancient Charm Collaboration, *J. Appl. Phys*. **106**, 074909 (2009).

ATTIVITÀ NEL SETTORE DELLE APPLICAZIONI DI TECNICHE DI NEUTRONI VELOCI TERMICI, eV E MEV

A) Diagnostica accelerata di dispositivi elettronici con irraggiamento di neutroni ai MeV (misure di Effetti di Singolo Evento (*Single Event Effect*), in dispositivi elettronici per l'industria avionica, automobilistica e medica - *pacemaker*). Nel 2007, Carla Andreani ha promosso e realizzato ad ISIS un esperimento di fattibilità [*Facility for fast neutron irradiation tests of electronics at the ISIS spallation neutron source*, **C. Andreani**, A. Pietropaolo, A. Salsano, G. Gorini, M. Tardocchi, A. Paccagnella, S. C. D. Frost, S. Ansell, S. P. Platt, *Applied Physics Letters*, 92, 114101 (2008)] per l'utilizzo di neutroni di alta energia (MeV), prodotti dalla sorgente a spallazione, per la *diagnostica accelerata* di dispositivi elettronici, *i.e* per la misura di SEE. Questi risultati hanno permesso la formulazione di un *business case* per la realizzazione di una linea di neutroni innovativa per *Chip Irradiation* ad ISIS (ChIPIR). CA ha partecipato alla progettazione e realizzazione della beamline **ChIPIR**, primo strumento del genere in Europa, nell'ambito dell'accordo di collaborazione internazionale tra il CNR e il *Science Technology Facility Council* (UK) per l'utilizzo di ISIS (2008-2014) - Progetto PANAREA del CNR. Lo strumento, in corso di realizzazione a ISIS, sarà disponbile agli utenti nella primavera del 2014.

B) Diagnostica di materiali di interesse per l'ingegneria e il settore storico artistico (beni culturali) con neutroni termici e agli eV
CA ha sviluppato tecnologie per *imaging*/tomografia 3D in materiali di interesse storico artistico nell'ambito del progetto Europeo *ANCIENT CHARM,* http://ancient-charm.neutron-eu.net/ach.
Nel 2006 Carla Andreani è stata la promotrice del consorzio COIRICH (www.coirich.it), *infrastruttura di ricerca distribuita* per la diagnostica di materiali di interesse storico artistico, di cui fanno parte il CNR, l'INFN, il Politenico di Milano, le Università di Roma Tor Vergata e Milano Bicocca, Kanso s r.l. e eFM s.r.l.

CA si dedica attivamente alla realizzazione di progetti interdisciplinari di grande rilevanza, per la promozione e diffusione delle tecniche e della strumentazione per spettroscopia di neutroni in Italia. Ha svolto questa attività come Esperto Scientifico per il CNR, il MIUR, attraverso dell'Associazione *School of Neutron Scattering* F. P. Ricci (http://www.sonsfpricci.org). e nell'ambito delle attività di consulenza che svolge per numerosi organismi, università e enti di ricerca internazionali. In tale contesto CA ha sviluppato una eccellente capacità di pianificazione, coordinamento e gestione sia sotto il profilo delle risorse umane che di quelle economico/finanziarie.

RESPONSABILE SCIENTIFICO DI CONTRATTI DI RICERCA NAZIONALI E INTERNAZIONALI (TITOLO DEL PROGETTO - ENTE FINANZIATORE)

[2008-2014] *PANAREA - Project financed within the CNR-STFC Agreement concerning collaboration in scientific research at the spallation neutron source ISIS for the construction of neutron beamlines ChIPIR and IMAT* - CONSIGLIO NAZIONALE DELLE RICERCHE (I)

[2011-2014] *Materials Enhancement for Technological Applications (META)* - FP7 - PEOPLE-2010-IRSES

[2011-2014] *SVILUPPO CULTURA Spin off, per la diagnostica di materiali di interesse storico artistico* – MIUR

[2005-2008] *ANCIENT CHARM: Analysis by neutron resonant capture imaging and other emerging neutron techniques: new cultural heritage and archaeological research methods* - FP6, NEST Project, Integrating and Strengthening the European Research Area

[2001-2006] *e.VERDI:electron Volt Energy Resonance Detector Instrument* - FP5, TMR-Access to Research Infrastructures, RTD

[2002-2006] *MAPS: Materials and Plasma Science: Optical Spectroscopy, Neutron Spectroscopy and Theoretical Methods* - FP5 Marie Curie Training Site

[2003-2005] *Microscopic Dynamics of Water in Confined Geometry by Neutron and X Ray Spectroscopy* - MIUR PRIN

[2000-2004] *TECHNI: Technology for Neutron Instrumentation*

[2000-2003] *The Microscopic Structure and Dynamics of Supercritical Aqueous Fluids* - FP5 TMR-Network

[1998-2002] *VESUVIO: A Project to provide enhanced neutron scattering capability at the highest energy transfers* - FP4, TMR-Access to Large Scale Facility, RTD

[2000-2002] *Study of the microscopic structure and dynamics of aqueous solutions at sub- and super-critical conditions* - MIUR PRIN

[1989-1990] *'Deep Inelastic Neutron Scattering*" - FP1 – TMR Contratto N. ST2J-0314-C

REFERENZE

Dr Ian Anderson	*Director Graduate Education and University Partnerships*,:, *Oak Ridge National Laboratory* (US) phone: +001 865-576-7777, mobile +001 865-8989005, e-mail: nai.nosredna@gmail.com
Prof Roberto G. M. Caciuffo	Head of Actinide Research, European Commission, Joint Research Centre, Institute for Transuranium Elements Actinide Research**,** Postfach 2340, D-76125 Karlsruhe (Germany), Tel.: +49 7247 951382, mobile: +49 151 12579997, e-mail:roberto.caciuffo@ec.europa.eu
Dr Michele Miele	*Addetto per le questioni spaziali*, Rappresentanza Permanente d'Italia presso l'Unione Europea Rue du Marteau, 7, 1000 Bruxelles Tel.: +32 2 22 00 577, mobile: +32 484 55 07 01, e-mail: space@rpue.esteri
Prof Michele Parrinello	Prof. Dr. Michele Parrinello, Department of Chemistry and Applied Biosciences, ETH Zurich, USI-Campus, Via Giuseppe Buffi 13 6900 Lugano SWITZERLAND, Room LUI, Tel. +41 58 666 48 01, mobile +41 794185739, e-mail: parrinello@phys.chem.ethz.ch
Prof Paolo Radaelli	*Dr Lee`s Professor of Experimental Philosophy* a University of Oxford, Department of Physics, Clarendon Laboratory Parks Road Oxford OX1 3PU, Tel.: +44 1865 (2)70957 mobile: +44 7403 311589, e-mail: p.g.radaelli@physics.ox.ac.uk
Dr Andrew D. Taylor	*Executive Director of STFC National Laboratories*. Science Technology Facility Council (STFC) Rutherford Appleton Laboratory, Chilton, Didcot, Oxon, OX14, 1DQ, UK. Phone: +44 1235 44 6681, mobile: +44 7770695400, e-mail: andrew.taylor@stfc.ac.uk

Ai sensi del DPR n. 445/2000 e consapevole che le dichiarazioni mendaci sono punite ai sensi del codice penale e delle leggi speciali in materia, la sottoscritta Carla Andreani dichiara che quanto sopra riportato corrisponde a verità.

La sottoscritta esprime il proprio consenso affinché i dati personali forniti possano essere trattati, nel rispetto del Decreto Legislativo 196/2003, per gli adempimenti connessi alla presente procedura.

Roma, 6.03.2014

Carla Andreani

ALLEGATO I

Prof CARLA ANDREANI

Elenco delle Pubblicazioni

1. **PUBBLICAZIONI SU RIVISTE INTERNAZIONALI CON REFEREES**
2. **LIBRI**
3. **COMUNICAZIONI SU INVITO A CONVEGNI E SCUOLE (selezione)**
4. **ATTI DI CONFERENZE E PROCEEDINGS (selezione)**
5. **ARTICOLI DIVULGATIVI**
6. **POSTER (ULTIMI ANNI)**
7. **NOTE INTERNE (selezione)**

Marzo 2014

Ai sensi del DPR n. 445/2000 e consapevole che le dichiarazioni mendaci sono punite ai sensi del codice penale e delle leggi speciali in materia, la sottoscritta Carla Andreani dichiara che quanto di seguito riportato corrisponde a verità.

1. PUBBLICAZIONI SU RIVISTE INTERNAZIONALI CON REFEREES

LISTA DELLE 12 PUBBLICAZIONI PIÙ CITATE (Al Febbraio 2014)

7. *A. J. Allen, M. T. Hutchings, C. G. Windsor,* ***C. Andreani***
"Neutron diffraction methods for the study of residual stress fields"
Advances in Physics **34**, 445 (1985)

87. ***C. Andreani,*** *D. Colognesi, J. Mayers, G. Reiter, R. Senesi,*
"Measurement of momentum distribution of light atoms and molecules in condensed matter systems using inelastic neutron scattering"
Advances in Physics, **54**, 377 (2005)

37. *A. K. Soper,* ***C. Andreani*** *and M. Nardone*
"Reconstruction of the orientational pair correlation function from neutron diffraction data: the case of liquid hydrogen iodide"
Phys. Rev. E **47**, 2599 (1993)

44. ***C. Andreani****, A. Filabozzi, F. Menzinger, S. Desideri, A. Deriu, A. Di Cola,*
"Dynamics of Hydrogen Atoms in Superoxide Dismutase by Quasi-elastic neutron Scattering"
Biophys. Journal **68**, 2519 (1995)

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3. COMUNICAZIONI SU INVITO A CONVEGNI E SCUOLE (Selezione)

77. *Carla Andreani*
"Quantal Nuclear Motions in Condensed H-Bonded Systems"
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76. ***Carla Andreani***
"Scienza Italiana ad ISIS"
Comunicazione su invito CNR Convegno Neutroni per l'Italia: Opportunità per nuovi sviluppi della scienza con i neutroni, Aula Convegnio CNR. Roma, Italia, 6 Dicembre 2013

75. ***Carla Andreani***
"Accelerated Diagnostics of Soft Errors in Electronic Devices Via MeV Energy Atmospheric Neutrons"
Comunicazione su invito NanotechITALY 2013, Key Enabling Tehcnology for Responsible Innovation, 27th – 29th November 2013 Venice, Italy

74. ***Carla Andreani***
"Probing our heritage"
Comunicazione su invito Institute of Physics, Physical Society Club, 9th October 2013, London, UK

73. ***Carla Andreani***

"The quantum nature of the OH stretching mode in ice and water probed by neutron scattering experiments"
Comunicazione su Invito FisMat2013, Milan, Italy, 9th – 13th September 2013

72. ***Carla Andreani***
"Direct Measurement of Competing Quantum Effects in the Melting of Heavy Water"
Comunicazione su Invito 3rd CMCSN Workshop, University of California, Davis, 24th - 26th June 2013

71. ***Carla Andreani***
"Deep and Inelastic neutron scattering of quantum particles in ice, normal and metastable phases of water"
Comunicazione su Invito National University of Singapore, Departement of Chemistry, 3 Science Drive, Singapore 4th July 2012

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Comunicazione su Invito Nanyang Technological University, 21 Nanyang link, Singapore 637371, 28th June 2012

69. ***C. Andreani***
"Neutron probe and Neutron Sources"
Comunicazione su invito alla XI Edizione School Francesco Paolo Ricci" Taormina 22-26 Maggio 2012

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67. ***Carla Andreani***
"Proton dynamics in the the stable and metastable phases of water"
Comunicazione su Invito University College London, Chemistry Department, 2 May 2012.

66. ***Carla Andreani***
"International research and training at Tor Vergata: high energy neutron scattering, neutron imaging and irradiation techniques"
Comunicazione su Invito Institute of Crystalline Materials, Shandong University, 18 Aprile 2012

65. ***Carla Andreani***

"International Research and Training at Rome Tor Vergata: neutron irradiation and proton quantum dynamics"
Comunicazione su Invito Sun Yat Sen University, The School of Physics & Engineering, 16 Aprile 2012

64. ***Carla Andreani***
"Research and Training at Rome Tor Vergata: the example of neutron imaging and irradiation"
Comunicazione su Invito Sino-French Institute of Nuclear Engineering and Technology, 13 Aprile 2012

63. ***Carla Andreani***
"Current experimental nuclear physics and neutron scattering research activities in Rome: an overview"
Comunicazione su Invito, Physics Department of the University of Hong Kong, 12 Aprile 2012

62. ***Carla Andreani***
"DINS and INS of quantum particles in ice, normal and metastable phases of water"
Comunicazione su Invito, Physics Department of the University Sapienza, 23 Marzo 2012

61. ***Carla Andreani***
"Light and heavy particles quantum dynamics in water and ice"
Comunicazione su Invito, Italian Physics for European Research Infrastructures, CNR Aula Convegni**,** 22-23 February Rome 2012

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59. ***C. Andreani***
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Comunicazione su invito alla X Edizione School Francesco Paolo Ricci" Villa Mondragone Settembre 2010 Rome.

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"Neutron Scattering Technology in Material and Nano-Science Research"
Comunicazione su invito, State Key Laboratory of Nuclear Physics and Technology, Beijing, China, 15th Settembre 2010

54. ***C. Andreani***
"Proton momentum distribution in bulk and confined water" ***Comunicazione su invito***, "XVth International Workshop on Quantum Atomic and Molecular Tunneling in Solids and other Condensed Phases", Darmstadt, Germany 5th Settembre 2010

53. ***C. Andreani***
"Neutron probe to illuminate the past"
Comunicazione su invito, International Summer School in Conservation of Historical, Monumental and Archaeological Sites, Università di Roma Tor Vergata, Luglio 2010

52. ***C. Andreani***
"Proton Quantum Dynamics in Water via DINS"
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Comunicazione su invito, ETH Zürich, Computational Science, Department of Chemistry and Applied Biosciences, 28 Gennaio 2010

50. ***C. Andreani***
"Neutroni: Irraggiamento e Radiografia dei materiali"

Comunicazione su invito, Laboratori Nazionali di Legnaro, Padova, 20 Gennaio 2010

49. ***C. Andreani***
"A light on the past: the neutron as a tool in archaeology"
Comunicazione su invito, Laboratori Nazionali di Legnaro, Padova 17 Novembre 2009

48. ***C. Andreani***
"*Proton Quantum Effects in Water*"
Comunicazione su invito, Oak Ridge National Laboratory, CNMS, 8 Novembre 2009

47. ***C. Andreani***
"Momentumm distribution and quantum effects in liquid water"
Comunicazione su invito, International workshop: *Structure and Dynamics of Hydrogen-Bonded Systems*, ICTP Trieste *26 - 27 October 2009.*

46. ***C. Andreani***
"*I neutroni e i Beni Culturali*"
Comunicazione su invito al Rotary, Settembre 2009

45. ***C. Andreani***
"*Neutrons: illuminating the past*"
Comunicazione su invito al Rotary, Marzo 2009

44. ***C. Andreani***
"Neutron techniques applied to Cultural Heritage"
Comunicazione su invito, International Summer School in Conservation of Historical, Monumental and Archaeological Sites, Università di Roma Tor Vergata, Luglio 2009

43. ***C. Andreani***
"Deep Inelastic Neutron Scattering in liquid water"
Comunicazione su invito al London Centre of Nanotechnology, 17 Decembre 2008

42. ***C. Andreani***
"Illuminating the past: neutron a tool for Cultural Heritage"
Comunicazione su invito al YICGG 2008, second edition, Research Competition 2008 Workshop "Global Governance: Growth and Innovation 2020, "Rome, August 18 – 27, 2008

41. ***C. Andreani***
"I neutroni, una sonda per l'indagne dei beni culturali"

Comunicazione su invito *al Convegno Scienza Orienta Tor Vergata Facoltà di Scienze MM.FF.NN. Febbraio 2008*

40. ***C. Andreani***
"Quando i neutroni non hanno segreti"
Comunicazione su invito *al Convegno Scienza orienta Tor Vergata Facoltà di Scienze MM.FF.NN. 12 Febbraio 2007*

39. ***C. Andreani***
"Investigation of Archaeological Artefacts using Neutron Spectroscopy with eV neutrons"
Comunicazione su invito *al Workshop on Neutron and Imaging 2006 – IAN2006, 23-26th October 2006, Oak Ridge (Tennessee, USA).*

38. ***C. Andreani***
"Proton mean kinetic energy of water in sub- and super- critical conditions '
Comunicazione su invito Workshop *Progress in Electron Volt Neutron Spectroscopy*, IV edition Perspectives in Neutron Spectroscopy at High Energy, *22 October 2006, Oalk Ridge (Tennesse-USA).*

37. ***C. Andreani***
"**EURICA-EU**ropean **R**esearch **I**nfrastructure for **C**onservation and **A**nalysis *(from RICH initiative)*
Comunicazione su invito *al Convegno 'Tecnologie (Digitali) e valorizzazione del Patrimonio Culturale, 19 Luglio (2006), Ex Chiesa di Santa Marta-Ministero dei Beni Culturali, Roma.*

36. ***C. Andreani***
"Investigation of marbles from VILLA ADRIANA via Neutron diffraction'
Comunicazione su invito *al Workshop Neutron and Archaeology, 29 March 2005, Budapest, (Hungary).*

35. ***C. Andreani***
"Single particle dynamics in fluid ^{3}He,^{4}He and ^{3}He/^{4}He liquid mixtures"
Comunicazione su invito al *International Conference on Neutron Scattering, Sydney, Australia il 27/11- 2/12 2005.*

34. ***C. Andreani***
"High Energy Inelastic Neutron Scattering on VESUVIO"
Comunicazione su invito Workshop *Progress in Electron Volt Neutron Spectroscopy*, III edition Perspectives in Neutron Spectroscopy at High Energy, Santa Fe, New Mexico, USA. *24th April 2005.*

33. ***C. Andreani***
"Principles and methods of Neutron Spectroscopy at the eV energies: Deep and High Energy Inelastic Neutron Scattering"
Lezioni tenute in veste di docente *della VII School of neutron Scattering Francesco Paolo Ricci, 21 Settembre 2 Ottobre 2004 Palau, (SS).*

32. ***C. Andreani***
"Short-time single particle dynamics in quantum and molecular systems
Comunicazione su invito *all'European Conference on Neutron Scattering Montpellier-Francia 2-5 Settembre* 2003

31. ***C. Andreani***
"Epithermal neutron scattering: present and future perspectives"
Comunicazione su invito *all'ILL (Grenoble-Francia)* ILL 23 Giugno 2003

30. ***C. Andreani***
"Single-particle dynamics in quantum system"
Comunicazione su invito al LXXXVIII Congresso *Nazionale della Societa' Italiana di Fisica, Alghero, 26 settembre - 1 ottobre 2002*

29. ***C. Andreani***
"The e-VERDI Project"
Comunicazione su invito *alla Neutron Round Table - Joint RTD Network - European Conference 'ESS – The European Spallation Source, the European Source of Science Bonn 16-17 Maggio 2002.*

28. ***C. Andreani***
"The single particle dynamical properties of matter studied by Neutron Spectroscopy at the eV energies: VESUVIO Project"
Comunicazione su invito *in occasione dell'inaugurazione dello spettrometro VESUVIO-Rutherford Appleton Laboratory (ISIS) 15 April 2002*

27. ***C. Andreani***
"Dinamica di singola particella in sistemi molecolari e quantistici"
Comunicazione su invito LXXXVII Congresso *Nazionale della Societa' Italiana di Fisica, 24-29 Settembre, Milano, Universita' degli Studi di Milano-Bicocca (2001).*

26. ***C. Andreani***
"Dynamics in quantum system: neutron spectroscopy with eV neutrons"
Comunicazione su invito *al convegno "F. P. Ricci: His legacy and future perspectives of neutron spectroscopy" Roma 26 Ottobre 2000*

25. ***C. Andreani***
"Scattering anelastico in sistemi molecolari e quantistici"

Docente *alla V Scuola di Spettroscopia di Neutroni F. P. Ricci, Palau (SS) 23 Settembre – 3 Ottobre 2000*

24. ***C. Andreani***
" Spectroscopy with eV neutrons"
Comunicazione su invito *tenuto all'Istituto ILL (Grenoble-Francia) 5 Giugno 2000.*

23. ***C. Andreani***
"Neutron spectroscopy with eV neutrons"
Comunicazione su invito *al 6th European Spallation Source, General Meeting 20-22 September 1999 Ancona –Italy*

22. ***C. Andreani***
"Single particle dynamics in fluid hydrogen and deuterium"
Comunicazione su invito *alla "European Physical Society- IV Liquid Matter Conference" Granada (Spagna) Luglio 1999*

21. ***C. Andreani***
"Spettroscopia con neutroni epitermici"
Docente *alla IV Scuola di Spettroscopia di Neutroni, Palau (SS) Settembre 1998*

20. ***C. Andreani***
"Deep inelastic neutron scattering from fluid H_2 and D_2" ***Comunicazione su invito*** *al Congresso Nazionale INFM – Rimini Giugno 1998*

19. ***C. Andreani***
VESUVIO- "A project to provide enhanced neutron scattering capability at the highest energy transfer"
Comunicazione su invito *al Meeting " Neutron Scattering Instrumentation Workshop – Studsvik, Svezia 6 Ottobre 1997.*

18. ***C. Andreani***
"Kinetic energy in ^{4}He through the superfluid transition and Bose condensation by High Energy Neutron Scattering"
Comunicazione *al Congresso Nazionale INFM Chia Laguna (Ca) 19-23 Maggio 1997.*

17. ***C. Andreani***
"Inelastic and quasi-elastic dynamics in superoxide dismutase"
Comunicazione su invito *al Workshop on " Inelastic and quasi-elastic Neutron scattering in Biology" ILL Grenoble France 14-15 Ottobre 1996*

16. ***C. Andreani***

"Scattering anelastico e quasi-elastico nella Superossido Dismutase"
Comunicazione *alla III Scuola di Diffrazione e Spettroscopia neutronica, Cala Capra, Palau (SS) 26 Settembre - 6 Ottobre 1996*

15. ***C. Andreani***
"Proton momentum distributions in fluid H_2"
Comunicazione *a congresso della "European Physical Society -5th General Conference of the Condensed matter Division". Aprile 22-25 1996 Baveno Stresa Italia.*

14. ***C. Andreani***
The impulse approximation in molecular fluids".
Comunicazione su invito *al Workshop, "The use of high energy neutrons in spectroscopy", tenutosi al Rutherford Appleton Laboratory (UK) il 4 Maggio 1995.*

13. ***C. Andreani***
The atomic momentum distribution of liquid deuterium: a comparison between experiment and theory".
Comunicazione *alla Conferenza internazionale "2nd Liquid Matter Conference" Firenze 18-22 Settembre 1993*

12. ***C. Andreani***
"Is hydrogen bond present in hydrogen halides other than HF?"
Comunicazione *alla Nato Advanced Research Workshop on Hydrogen Bond Networks tenutasi a Cargese, Corsica (Francia) 16-22 Agosto 1993*

11. ***C. Andreani***
"Deriving the asymptotic scaling function in Deep Inelastic Neutron Scattering."
Comunicazione su invito *al Workshop internazionale "Highlights in the Physics of Liquids: Experimental opportunities from the Neutron and Syncrotron Radiation Sources" Trieste 19 - 29 Luglio 1993*

10. ***C. Andreani***
"Neutron diffraction studies of molecular liquids"
Comunicazione su invito *alla "Scuola di Spettroscopia Neutronica e Raggi X" Montelibretti 12-21 ottobre 1992*

9. ***C. Andreani***
"The state of art in the field of microscopic structure in diatomic molecular liquids"
Comunicazione su invito *al workshop internazionale " Molecular and Complex Liquids" Universita' "La Sapienza" Roma settembre 7-8 1992*

8. ***C. Andreani***
"Orientational Correlations in Liquid Iodine"
Comunicazione *al "Symposium on the Physics of Molecular Liquids" Oxford (UK) 1-4 Aprile 1991*

7. ***C. Andreani***
"Hydrogen Projected vibrational density of states in hydrogenous molecular solids"
Comunicazione *al Congresso "H-bond Physics" tenutasi a Il Ciocco Lucca 11-14 Settembre 1990*

6. ***C. Andreani***
"Le esperienze di diffrazione neutronica condotte dai gruppi italiani presso la sorgente ISIS del Rutherford Appleton Laboratory"
Comunicazione su invito *al Convegno della Societa' Italiana di Spettroscopia Neutronica, SISN, tenutosi al CNR nel febbraio 1990*

5. ***C. Andreani***
"Lo scattering di neutroni epitermici presso la sorgente ISIS del Rutherford Appleton Laboratory"
Comunicazione su invito *al Convegno della Societa' Italiana di Spettroscopia Neutronica, SISN, tenutosi al CNR nel febbraio 1989*

4. ***C. Andreani***
"Impulsive neutron scattering at ISIS"
Comunicazione *al IX General conference of the Condensed Matter Division-Nice 6-9 Marzo 1989*

3. ***C. Andreani***
"Deep inelastic neutron scattering from hydrogeneous solids"
Comunicazione *al International Symposium: "Neutron scattering at ISIS: recent highlights in condensed matter research" - svoltosi a Villa Mondragone (Monteporzio Catone) 14-16 Dicembre 1988*

2. ***C. Andreani***
"Inchoerent inelastic neutron scattering on polycrystalline ice Ih"
Comunicazione *al Symposium on Neutron Scattering, Berlino Ovest (6-8 Agosto 1984)*

1. ***C. Andreani***
"Measurements of internal stress within bulk materials using neutron diffraction"
Comunicazione *alla II General Conference of the Condensed Matter Division of the EPS (European Physical Society), Manchester U.K. (22-25 Marzo 1982)*

4. ATTI DI CONFERENZE E PROCEEDINGS (selezione)

1. *P. Morales, **C. Andreani**, D. Rocca*
"Dinamica riorentazionale di HCl in fase liquida mediante scattering della luce"
Proceedings del VI Congresso Annuale del settore di Fisica Atomica e Molecolare del GNSM - Perugia (*28 Febbraio 1981*).

2. ***C. Andreani**, P. Bosi, E. Mazzega, F. Sacchetti, C.G. Windsor*
"Observations of the dispersion relation of the O-D stretching modes in heavy ice "
Proceedings del Conferenza "The neutron and its applications" Cambridge, (13-17 settembre 1982)

3. *A. J. Allen, **C. Andreani**, M. T. Hutchings, C. M. Sayers, C. G. Windsor*
"Measurements of internal stress within bulk materials using neutron scattering"
Proceedings del Conferenza per il 50 dalla scoperta del Neutrone "The neutron and its applications" Cambridge, (13-17 settembre 1982)

4. ***C. Andreani**, G. Jacucci, A. Rahman*
"Lattice dynamics of a central force model for ice"
Proceedings del I Workshop Trentino di calcoli a macchina in meccanica statistica (1-28 Febbraio 1983)

5. *A. J. Allen, **C. Andreani**, M.T. Hutchings, C.M. Sayers, C.G. Windsor*
"Neutron diffraction studies of texture and residual stress in weldments"
Proceedings del V Congresso Internazionale di Metallurgia e Scienza dei Materiali di Riso, Danimarca (3-7 Settembre 1984)

6. ***C. Andreani**, F. Cilloco, L. Nencini, D. Rocca*
"Measurements of the liquid bromine structure factor S(Q) at T=30C and T=200C along the coexistence curve by neutron diffraction"
Proceedings del "Annual Symposium on Neutron Scattering", Berlino Ovest (6-8 Agosto 1984)

7. ***C. Andreani**, V, Merlo, M.A. Ricci*
"Vibrational density of states in polycrystalline sulphuric acid"
Proceedings del Workshop "Neutron scattering in molecular solids", Grenoble 12-15 Luglio 1988

8. ***C. Andreani**, V. Merlo, M.A. Ricci*
"The structure of deuterium sulphide. A pulsed neutron scattering experiment at ISIS "

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9. ***C. Andreani**, G.Baciocco, R. Holt,J. Mayers*
"Resolution in deep inelastic neutron scattering using pulsed sources"
Proceedings del Workshop on Momentum distributions 24-26 ottobre 1988 *Argonne National Laboratory (USA)*

10. ***C. Andreani**, G. Baciocco,J. Mayers*
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11. ***C. Andreani**, U. Buontempo, J. Mayers, F.P. Ricci*
"Energy resolved neutron radiography"
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12. ***C. Andreani**, M. Nardone, F. P. Ricci*
"Partial Structure factors and orientational correlations in liquid HI"
Proceedings del Workshop "International workshop on the methods in the determination of partial structure factors of disordered matter by neutron and anomaluos x-ray diffraction." *Grenoble (F) 10 -11 settembre* (1992)

13. ***C. Andreani,** A. Filabozzi, A. Deriu*
"Dynamics of hydrogen atoms in superoxide dismutase "
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14. ***C. Andreani**, D. Colognesi, A. Filabozzi, M. Nardone, E. Pace*
"Deep inelastic neutron scattering from dense fluid parahydrogen"
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15. ***C. Andreani,** D. Colognesi and R. Senesi*
" Kinetic energy in low density supercritical ^{4}He"
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16. ***C.Andreani***
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17. *R. Senesi, **C. Andreani**, D. Colognesi*
"Single Particle kinetic energy in solid and dense liquid ^{3}He.
Scientific Highlights in ISIS **2001** *Annual Report - CCLRC Rutherford Appleton Laboratory (UK) pag 60.*

18. *A. Pietropaolo, **C. Andreani**, A. D'Angelo, G. Gorini, S. Inberti, N. Rhodes, E. M. Schooneveld, R. Senesi, M. Tardocchi*
"The resonance detector spectrometer for neutron spectroscopy in the eV energy region"
Proceedings of Eleventh International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics, September (2002)*, Pruhonice (Prague) Czech Republic,* World Scientific New Jersey.

19. ***C. Andreani**, A. D'Angelo, A. Pietropaolo, R. Senesi, G. Gorini, M. Tardocchi, N. Rhodes, E. M. Schooneveld*
"Condensed matter studies with 20-100 eV neutrons: effective detection systems for High Inelastic Neutron Scattering and Deep Inelastic Neutron Scattering".
***Scientific Highlights** in* ISIS (**2003)** Annual Report, CCLRC Rutherford Appleton Laboratory (UK).

20. ***C. Andreani,** A. Pietropaolo, R. Senesi, , G. Gorini , M. Tardocchi*
"New perspectives for electronVolt neutron spectroscopy on inverse geometry instruments at pulsed sources"
Proceedings del ICANS-XVI 16th Meeting of the International Collaboration on Advanced Neutron Sources May 12 – 15, (2003) *Düsseldorf-Neuss, Germany.*

21. ***C. Andreani**, A. Pietropaolo, R. Senesi, G. Gorini, E. Perelli-Cippo, M. Tardocchi, N. Rhodes, E. M. Schooneveld*
"Density of States in ice measured using the new VLAD detector technology:"
***Scientific Highlights** in* ISIS (**2004)** Annual Report, CCLRC Rutherford Appleton Laboratory (UK).

22. *A. Filabozzi, **C. Andreani**, M.P. De Pascale, A. Pietropaolo, R. Senesi, G. Gorini, E. Perelli-Cippo, M. Tardocchi, P.G. Radaelli, W. Kockelmann*
"Non invasive neutron diffraction analyses of marbles from the "Edificio con Tre Esedre" in Villa Adriana"
Proceedings del Primo Incontro Internazionale, "Rileggere l'Antico. Architetture di epoca imperiale: metodi, tecniche e modelli a confronto", Roma, 13-15 dicembre (2004), Complesso monumentale S.Michele a Ripa

23. *R. Senesi, **C. Andreani**, D. Fernandez-Canoto, V. Garbuio, G. Gorini, S. Imberti, E. Perelli-Cippo, A. Pietropaolo, N.J. Rhodes, E.M. Schooneveld, M. Tardocchi*

"Neutron spectroscopy of high energy excitations on the VESUVIO spectrometer"
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24. *A. Pietropaolo,* ***C. Andreani****, D. Fernandez-Canoto, V. Garbuio, G. Gorini, S. Imberti, E. Perelli-Cippo,R. Senesi, M. Tardocchi*
"Resolution in High energy Inelastic Neutron Scattering Using VESUVIO spectrometer"
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25. ***C. Andreani****, S. Imberti, A. Pietropaolo, R. Senesi, G. Gorini, E. Perelli-Cippo, M. Tardocchi, T. Abdul-Redah, J. Mayers, N.J. Rhodes, E. M. Schooneveld, J. Tomkinson*
"High Energy Inelastic Neutron Scattering on the VESUVIO spectrometer at ISIS"
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"Neutron Techniques in Cultural Heritage"
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28. *Zsolt Kasztovszky and the Ancient Charm Collaboration*
"ANCIENT CHARM: a new European project for neutron-based 3D imaging with applications to archaeological research"
SYMPOSIUM ON ARCHAEOMETRY, Quebec City (Canada), 2/6 May (2006)

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"A New Hardware/Software Platform and a New 1/E Neutron Source for Soft Error Studies: Testing FPGAs at the ISIS Facility"
IEEE RADiation Effects Conference (RADECS) - *Workshop or symposium* (2006)

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"A new hardware/software platform for the soft-error sensitivity

evaluation of FPGA devices"
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31. *Zs. Kasztovszky, Z. Kis, T. Belgya, W. Kockelmann, S. Imberti, E. M. Schooneveld, G. Festa, A. Filabozzi,* ***C. Andreani****, A. Kirfel, K. T. Biró, K. Dúzs, Zs. Hajnal, P. Kudejova6 M. Tardocchi* and the Ancient Charm Collaboration
"Promt Gamma Activation Analysis and time of flight neutron diffraction of '' in the 'Ancient Charm' project"
12th Proceedings at the International Conference on Modern Trends in Activation Analysis Tokyo Metropolitan Univ., Hachioji-shi, Tokyo, JAPAN, (Sep. 16-21 2007). Special issue to be published, September 2008

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"Neutrons and music: Imaging investigation of ancient flute musical instruments"
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5. ARTICOLI DIVULGATIVI

1. 'Instrument for rapid testing of effects of high energy neutrons on electronic devices'
   Carla Andreani, Chris Frost, Giuseppe Gorini and Alessandro Paccagnella, ASI Magazine, January 2014

2. "I neutroni svelano I segreti dei Beni Archeologici ed Artistici"
   Carla Andreani e Giuseppe Gorini
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3. "L'arte più nascosta svelata dai neutroni"
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4. "E i fisici progettano una TAC per I monumenti"
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6. POSTER (ULTIMI ANNI)

1. ***C. Andreani***, *A. Filabozzi, A. Deriu, D. Di Cola, F. Menzinger, A .Desideri*
   "Internal dynamics of hydrated Cu/Zn Superoxide Dismutase"
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2. ***C. Andreani*** , *D.Colognesi, A.Filabozzi, F.Menzinger,*
   "An X-ray Diffraction Study of Liquid Chlorine"
   Poster section al Congresso Nazionale di Fisica della Materia di Brescia (13-16 giugno 1994).

3. ***C. Andreani***, *A.Filabozzi, A.Deriu, D.Di Cola, F.Menzinger, A.Desideri*
   "Dynamics of Cu/Zn Superoxide Dismutase"
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   "Temperature dependence of low frequency dynamics of Superoxide Dismutase derived by quasi-elastic and inelastic neutron scattering"
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29. *R. Senesi, **C. Andreani**, A. Filabozzi, G. Gorini, S. Nufris, E. Perelli-Cippo, A. Pietropaolo, N. Rhodes, E. M. Schooneveld, M. Tardocchi,*
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La sottoscritta esprime il proprio consenso affinché i dati personali forniti possano essere trattati, nel rispetto del Decreto Legislativo 196/2003, per gli adempimenti connessi alla presente procedura.

Roma, 6.03.2014

Carla Andreani

ALLEGATO II

Executive Summary of the Area Panel of Physical Sciences To the National Research Council of Italy

The members of the Panel for the evaluation of research in Physical Sciences submit in this report their general conclusions and recommendations.
The Panel has unanimously approved the views expressed in this report.

November 23th, 2009

Professor Carla Andreani (Chairperson)
Università degli Studi di Roma Tor Vergata

Professor Antonio Barone
Università degli Studi di Napoli

Professor Livio Baldi
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Professor Patricia Bassereau
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Professor Nick Brookes
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Professor Francesco De Martini
Sapienza Università di Roma

Professor Manuel Cardona
Max-Planck-Institut für Festkörperforschung, Stuttgart

Professor Lorenzo Cordone
Università degli Studi di Palermo

Professor Francesco Pegoraro
Università di Pisa

Professor Michele Parrinello
ETH di Zurigo, Lugano

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Executive summary

This is the report of the International Physical Science Panel convened by the Research Council of Italy (CNR) to assess the quality and relevance of the research in Physical Science of the 18 CNR Institutes listed in Table I. The Committee prepared this report following a review of the evaluation documents provided by the institutions, visits to the Institutes and discussions with the staff. Assessment of the scientific quality and productivity of research groups was primarily based on the information provided in the documents prepared by the Directors of the Institutes, publications and other printed materials that were available during the interviews, publications that the Committee accessed electronically from databases and also on a bibliometric analysis.

The Panel has identified areas of strength, with high profile Institutes at the international level as well as clear weaknesses.

A set of specific recommendations for future development in the field, including potential means of improvement, is provided in the report.

The Panel noticed that there is an imbalance in favour of project-driven, directly applicable, short-term research, in spite of the fact that basic research has made significant contributions to the present wealth of research within CNR.

In order to maintain an internationally leading position in the areas of physics and material science important to the national economy, CNR should carefully consider:

- Putting into place actions to stimulate collaborative, interdisciplinary research.
- Using input from industries and other stakeholders to identify deficiencies in research strategies.
- Creating administrative and scientific structures to support multidisciplinary research activities at Large Scale facilities in a long term sustained way.
- Compiling, maintaining and publicising a nationwide inventory of facilities along with access procedures.
- Creating mechanisms and incentives to consolidate major materials preparation and characterisation facilities to serve the broader CNR community.

The Panel recommends that:

- Strategic research plans should be established, in coordination with the Institutes, and taking into account the needs of CNR and of the society.
- Each Institute should have its own board of international panellists that reviews its activities.
- Effective leadership should be encouraged in the research groups, in order to ensure a better implementation of the formulated strategies.
- Focus resources on those groups that CNR considers crucial for its long-term future.
- Technology transfer should be encouraged. Possibly by strengthening of the appropriate structures.
- The independent development of young researchers should be nurtured and assisted. Adequate career perspectives should be offered.
- All actions should be taken to ensure a stable institutional environment and funding.

More details are given in the report.

Panel Evaluation and Recommendations for future development

The objective of this evaluation is to assess the quality and relevance of research of the 18 CNR Institutes in Table I. The evaluation has also assessed whether the environment enables the excellence of each Institute.

A numeric evaluation and a set of recommendations concerning the future development of Physical Science research at CNR were carried out (see individual Tables) following the Evaluation guidelines in Annex I.

Table I

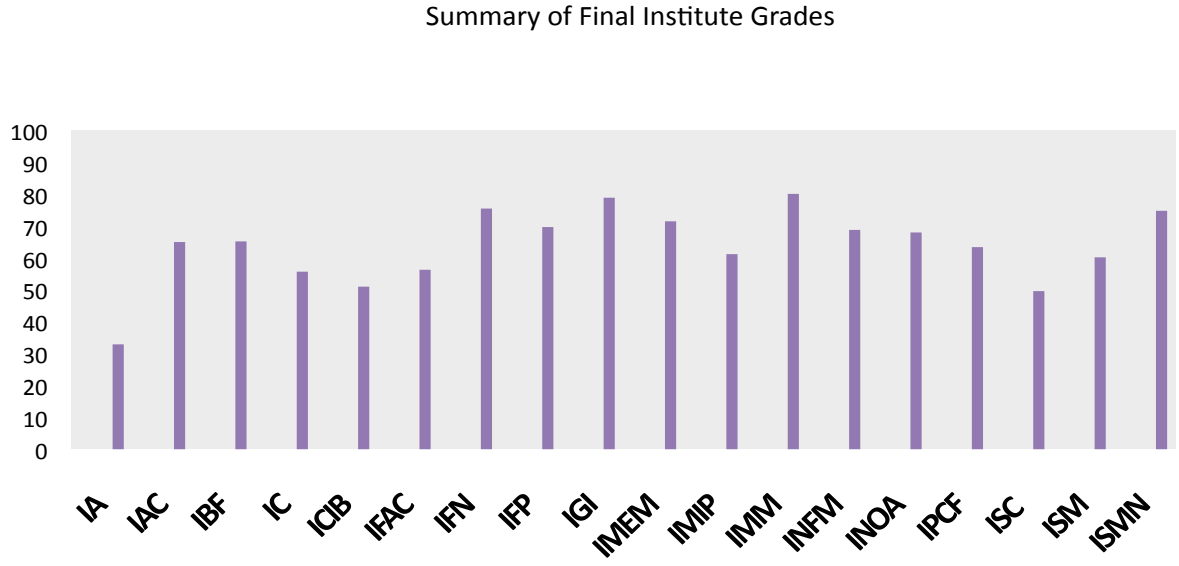
		NAME
1	IA	Institute of acoustics Orso Mario Corbino
2	IAC	Institute for computational applications Mauro Picone
3	IBF	Institute of biophysics
4	IC	Institute of crystallography
5	ICIB	Insitute of cybernetics Edoardo Caianiello
6	IFAC	Institute of applied physics Nello Carrara
7	IFN	Institute for photonics and nanotechnologies
8	IFP	Institute for plasma physics Piero Caldirola
9	IGI	Institute of ionized gas
10	IMEM	Institute of materials for electronics and magnetism
11	IMIP	Institute of inorganic methodologies and plasmas
12	IMM	Institute for microelectronics and microsystems
13	INFM	National Institute for the physics of matter
14	INOA	National Institute of applied optics
15	IPCF	Institute for chemical and physical processes
16	ISC	Institute of complex systems
17	ISM	Institute of structure of matter
18	ISMN	Institute of nanostructured materials

The evaluation is expected to give a basis for:

- The institutions concerned, at different levels of their organization, to further develop their research activities.
- Strategic decision making by the CNR, determining future priorities within and between individual areas of research.
- Identifying areas of research that need strengthening in order to ensure that the CNR maintains the expertise necessary to assist government decisions.
- Providing advice to the relevant ministries that fund research in Physical Science.

The evaluation panel composed of ten members has elected as chairperson Prof. Andreani. The Report of each Institute (a total of eighteen) is based on the analysis and recommendations of all Panel members. The review panel spent approximately eighteen days listening to presentations, and interviewing directors, other staff members and students. The Panel also visited all central laboratories and workshops, with the exception of INFM. In this case, the researchers responsible for the different centres convened in Rome for a two days meeting. Most staff and students had clearly taken the review very seriously and had invested much time on it. They were also very helpful and responsive, which made the Panel's task quite pleasant.
Evaluation of the eighteen CNR research Institutes by the Panel resulted in eight Institutes with an

overall rating 'very good' (IMM, IGI, IFN, ISMN, IMEM, IFP, INFM, INOA), eight Institutes with an overall rating 'good' (IBF, IAC, IPCF, IMIP, ISM, IFAC, IC, ICIB), one Institute with an overall rating 'fair' (ISC), and one Institute with an overall rating 'weak' (IA) . The ratings of the Institutes with overall rating 'fair' and 'weak' have to be seen in the light of the special circumstances in which the researchers in those institutes have to work. These institutes have little focussed research activities, weak core business and too many fragmented research groups, or are too small and hence subcritical.



International relevance of the research topics

The research topics covered by the Institutes span many of the current problems in Physical Science that are relevant or strategic for CNR and Italy: structure and dynamics of condensed and biological matter with applications to biosciences and medicine, environmental sciences, nanoscience and nanotechnology, material processing, energy, and engineering as well as fundamental physics and chemistry.
In order to contribute to the competitiveness of the country, research must be excellent at an international level. Publication in international peer-reviewed leading scientific journals is a most important indicator; **in this respect, the Panel appreciated that most of the research Institutes have good publications and citation records.**

Increasing the efficiency of the research groups

- The Panel noted that most of the senior staff members have spent a large part of their careers at CNR, with perhaps a few post-doctoral years abroad. In our opinion this is not healthy: one would ideally like to see less internal promotion and inbreeding and more external recruitment. This will only happen if the research programme is world class. The Panel is aware that external recruitment bears the danger of further fragmentation, in particular when connected with a change of research direction, but the Panel believes that this can be controlled through active management.
- The Panel observed that in some Institutes there are groups which work isolated from others that are active in more-or-less closely related research fields, within the same Institute (see individual evaluation Tables). Although competition among groups can be stimulating and beneficial for the research quality, it is the opinion of the Panel that these groups could benefit from closer contacts.

Recommendations:

- The CNR should set up a strategic research plan and focus resources in order to maintain and further develop an internationally leading capability in the provision and application of ultra-fast, high intensity lasers and plasma physics. The strategic direction of the CNR is to exploit the links between its facilities (based at RFX at IGI, IFP, IFN, IPCF) in the areas of fusion energy research, plasma-based particle acceleration, and ultra-fast spectroscopy for bioscience and nanotechnology applications, whilst maintaining a sufficiently flexible capability to encourage innovative research in other areas.
- The ELETTRA Light Source at Trieste is the largest scientific facility built in Italy over the last 30 years. It is a world-class medium energy light source. CNR, as one of its major stakeholders, should ensure that the facility is operated as cost-effectively as possible. Sharing expertise and infrastructure costs with the Area Science Park Campus is seen as crucial to obtain this result. In view of the SPARX (Sorgente Pulsata Autoamplificata di Radiazione X) FEL project, the CNR expertise in accelerators, lasers and beam lines could provide a very valuable contribution to the project.
- The CNR participates in several instrumentation and access programs at large-scale European facilities with synchrotron radiation and neutron beams (ESRF, ILL, ISIS). The CNR expertise in accelerators, lasers, synchrotron radiation (SR) and beam lines provides a very valuable contribution. The capabilities of the CNR teams in beam line developments at SR and neutron facilities produces excellent results and it is well recognised at international level. Thus a coordinated strategy should be put into place comparing cost and benefits, and an evaluation process (peer review) set up in order to define strategic research programs and set priorities at national and international large scale facilities. This would help the CNR to optimise the use of large scale facilities in the long-term.

ANNEX I

Evaluation guidelines

The final assessment of each CNR institute has been performed as follow:

- **For each Institute the Panel has graded individual items in Table 8** - *i.e.* Scientific publications, Promotion of the scientific and technological dissemination, Intellectual property (editorial activity + patents), Education activity and scientific exchanges, Participation to projects and modules, Realization and management of facilities and infrastructures – **The total grade is on a scale from 1 to 100.**

- In addition to the number scale each Institute gets a TOTAL **letter grade* - A or B or C:**
  Letter grade A (scale from 67 to 100): The research activity and/or the Institute has high scientific relevance for the Institute and/or in general for the CNR and should be supported under any circumstance. The scale range **67-100** for **A, i**s sub-divided in:
  Excellent = scale range 85-100
  Internationally leading position, undertaking original research and publishing in the best international journals. High productivity, including number of Ph.D. theses, relevant numbers of citations per researcher and per publication. Clear and convincing core business, strategy and future planning. Very positive overall impression of the research group and leadership.
  Very Good = scale range 67-84
  A publication profile with a high degree of international publications in good journals. In the period of evaluation high productivity, very relevant to international research and to Italian society, including Ph.D. training. Good strategy and future planning. Very positive overall impression of the research group.

  - **Letter grade B (scale from 34 to 66)**: The research activity and/or the Institute has average scientific relevance for the Institute and/or in general for the CNR and the Institute should be supported with second priority. The scale range **34-66** for **B,** is subdivided in:
    Good = scale range 51-66
    Contribution to international and national science with good quality research of relevance both to international research development and to Italian problem solving. In the period of evaluation the number of Ph.D.s is reasonable. Good balance between international and national publications. Acceptable productivity. Strategic plans are reasonable to good. Positive overall impression of research group.
    Fair = scale range 34-50
    The quality of research is acceptable, but the international publication profile is modest. Much routine work evident in research programme design and in publications, few original contributions. In the period of evaluation relevance and productivity of research are not exciting. Strategic planning exists, but is not convincing or realistic. Overall impression is positive but with significant reservations by the evaluators.

  - **Letter grade C (scale from 1 to 33)**: The research activity and/or the Institute is of low scientific quality and should not be supported or as it is not relevant to CNR. The scale range **1-33** for **C** is:
    Weak = scale range 1-33
    Research quality is below good standards and the publication profile is poor. In the period of evaluation only occasional international publications, no original research and little relevance to national problems. Diffuse strategic planning. No overall positive impression by evaluators.