**CV of prof. Carlo Alberto Nucci**

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(Italian version)

**Notizie biografiche e carriera**

[redacted] Laureato in Ingegneria elettrotecnica nell' AA 1980/81 con lode e medaglia 'Luigi Donati'.
Abilitato alla professione di ingegnere nel 1982. Ricercatore universitario nel 1983, professore associato nel 1992, straordinario nel 2000, ordinario dall'ottobre 2003, presso l'Università di Bologna.

**Attività didattica**

Presso la Facoltà d'ingegneria dell'Università di Bologna:
insegnamenti di

- Centrali elettriche dall'AA 1990-91 all'AA 1998-1999
- Sistemi elettrici per l'energia dall'AA 1998-1999 all'AA 2015-2016
- Elementi di sistemi elettrici per l'energia dall'AA 2001-2002 all'AA 2005-2006
- Elementi di Impianti e Sicurezza elettrica dall'AA 2006-2007 all'AA 2013-2014 per la Laurea in Ingegneria Civile
- Electrical power system and smart grids nell'A.A. 2015-16 e – Modulo 2 – dall'A.A. 2019-20 ad oggi per la Laurea Magistrale in Ingegneria dell'Energia elettrica (curriculum in Inglese)
- Impianti elettrici dall' A.A. 2016-17 ad oggi per la Laurea triennale in Ingegneria dell'Energia elettrica.
- Sistemi elettrici per l'energia dall'AA 2016-17 ad oggi per la Laurea Magistrale in Advanced design.
- Sistemi elettrici per l'energia e smart grids dall'AA 2018-19 ad oggi per la Laurea Magistrale in Ingegneria dell'Energia elettrica.

Docenza in Master universitari post-laurea:

- "Innovazione della manutenzione e gestione dei patrimoni urbani ed immobiliari", nel 2003;
- "Previsione, prevenzione e controllo del rischio industriale" nel 2004;
- "ENI Corporate Master: Progettazione di Impianti per lo Sviluppo di Campi Petroliferi Offshore" nel 2007;
- "ENI Corporate Master: progettazione di impianti oil & gas" nel 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015;
- "Electrical Hazard, Master SAIPEM" nel 2011, 2012, 2013, 2014;
- "Sicurezza e prevenzione nell'ambiente di lavoro, Master Unibo" negli anni 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019,2020.

Presso il Politecnico Federale di Losanna:

- docente del "Cours Post gradé Génie Electrique" dal 2001 al 2003.
- docente del corso "Distributed Genartion from Renewables" nel 2013

Nell'associazione europea EES-UETP:

- organizzatore e docente di diversi corsi post laurea
- chairman del *Program Committee* dal 2002 al 2007

**Attività Scientifica**

Responsabile Scientifico del Laboratorio di Ingegneria dei sistemi elettrici di potenza (LISEP) del Dipartimento di Ingegneria Elettrica dal 1994.

Attività scientifica principalmente sui seguenti temi:

- analisi del comportamento dinamico degli impianti di produzione e dei sistemi elettrici di potenza con particolare riferimento alle condizioni di riavvio del sistema dopo un blackout;
- transitori elettromagnetici nei sistemi elettrici, e in particolare quelli provocati da scariche atmosferiche, ai fini del miglior coordinamento delle protezioni;
- *smart grid*, gestione delle reti di distribuzione in presenza di generazione distribuita, anche da fonte rinnovabile;
- Localizzazione dei guasti nelle reti di distribuzione
- *Phasor Measurement Units* (PMUs);
- impianti per la vetrificazione 'in situ' dei rifiuti;
- Smart City e Energy Community

**Pubblicazioni**

Autore e/o coautore di oltre 370 lavori su riviste varie e su atti di conferenze nazionali ed internazionali, di vari capitoli di altrettanti volumi editi da IEE, Kluwer, Rumenian Academy of Science e WIT press, IEEE-Wiley, di due ‘standard' della IEEE e di alcune Technical Brochure della CIGRE.

**h-index**
(Scopus)=39.

***Keynote, plenary speaker, invited lecturer***

Invited *Keynote plenary speaker* e *lecturer* a convegni internazionali (SIPDA 1997 –San Paolo, Brasile; ISH '01– Bangalore, India; ICHQP'06–Lisbona, Portogallo; PSCC 2008–Glasgow, UK; IPST'09 – Kyoto, Giappone; APECM'10 – Beijing, Cina; ISGT 20, IWEC'11 – Kyoto; IEEE International Forum Smart Grids for Smart Cities Paris, 2016; RTSI’18–Palermo; MedPower ‘18–Dubrovnink; SynEnergy Med ‘19–Cagliari; PowerTech’19 – Milano) e presso università straniere (Politecnico di Losanna, Università dell'Arizona, ‘Bangalore Institute of Science', Università di San Paolo, Politecnico di Lisbona, Università Politecnica di Bucarest, Università Doshisa di Kyoto, Università di Siviglia, ‘Seoul National University', Università di Budapest, Illinois Institute of Technology, Università Tsinghua di Pechino, Shandong University a Jinan, Università di Lubiana).

**Progetti di ricerca**

Responsabile nazionale di due progetti PRIN, locale di una mezza dozzina. Responsabile scientifico di numerosi contratti di ricerca finanziati dalla Commissione Europea tra il Dipartimento di afferenza ed altri enti di ricerca e/o istituti universitari italiani e stranieri su vari temi: riavvio del sistema elettrico in seguito a ‘black-out', coordinamento dell'isolamento delle reti di distribuzione, *smart grid* e gestione delle reti di distribuzione attive dell'energia elettrica con generazione distribuita, la protezione delle linee e degli aerogeneratori contro il fulmine, la protezione dei sistemi elettrici contro i disturbi elettromagnetici, la localizzazione dei guasti nelle reti di distribuzione, *smart city* e *local energy community*.

**Attività/servizi istituzioni nazionali**

Per l'Università di Bologna
- Coordinatore della commissione per i servizi generali (1995-1999),
- Membro Commissione Finanziamenti della Facoltà di Ingegneria (2002-2006)
- Membro dell'Osservatorio della ricerca dell'Ateneo (dal 2004 al 2010)
- Vice Preside della Facoltà di Ingegneria dal novembre 2008 sino al termine
- Coordinatore del Corso di Studio in Ingegneria dell'Energia Elettrica dall'A.A. 2012-13 per due mandati consecutivi
- Coordinatore del Gruppo tematico di Ateneo 'Energy' dall'aprile 2017
- Selezionato dall'Ateneo come membro del Comitato Tecnico Scientifico PER (Piano Energetico Regionale)

Altre attività
- Membro del GEV per la VQR 2011-2014
- Presidente del Gruppo Universitario Nazionale dei docenti di Sistemi elettrici per l'energia (SSD ING/IND-33) dal gennaio 2013 al dicembre 2015.
- Presidente della Sezione AEIT dei Bologna dal maggio 2016 al gennaio 2019.
- Presidente del Comitato Tecnico 81 "Protezione contro i fulmini" dal luglio 2016.
- Rappresentante nazionale nel Mission Subgroup 'Climate-Neutral and Smart Cities' dal novembre 2019.

**Attività/Servizi istituzioni internazionali**

Nell'*International council on large electric systems* (CIGRE):
- Membro di diversi gruppi di lavoro
- Convener del gruppo di lavoro "Lightning" sino al 2007
- Chairman dello Study Committee C4 "System technical performances" per il periodo 2006-2012.

Nella IEEE:
- Membro dei gruppi di lavoro "Lightning performance of distribution lines" e "Distributed Resources: Modelling and Analysis"
- Chairman dell'International Steering Committee della Conferenza internazionale PowerTech dal 2002 al 2007
- Chairman dell'Italian PES Chapter dal 2002 al 2007
- Region 8 Representative per la "IEEE PES Region 8 (Europe, Middle East and Africa)" e membro dell'IEEE PES Governing Board nel biennio 2009-2010
- Membro dello IEEE Smart City Steering Committee nel 2014-2015
- Chair, IEEE/PES Region 8 Scholarship Plus Committee dal 2014.

Nell EES-UETP:
- Chairman del Technical Program Committee nel periodo 2002-2007.

Nella Commissione Europea:
- Panel member (Systems and Communication Engineering) dell' ERC Advanced Grants Call 2015 and 2017 evaluations
- Rappresentante con diritto di voto dell'Università di Bologna per EERA AISBL.

**Attività editoriali**

- *Regional editor* dell'Electric Power Systems Research Journal (EPSR), Elsevier dal 2005
- *Editor in Chief* della stessa rivista dal 2010
- *Guest editor* di varie "special issue" della stessa rivista

- Membro dell'editorial board del Journal of Electric Power and Energy Sources (JEPES), Elsevier

**Riconoscimenti e premi**

- Best paper award, "CIGRE- IFAC International Symposium on Control of Power Plants and Power Systems", Brussels, 2000 for the paper "The black-startup simulation of a repowered thermoelectric unit", in cooperation with A. Borghetti, G. Migliavacca and S. Spelta
- Cigre Technical Committe Award, 2004
- IEEE ed IET Fellowship, 2007
- Best paper award, "Analysis of black-startup and islanding capabilities of a combined cycle power plant" in cooperation with A. Borghetti, M. Bosetti, M. Paolone, G. Ciappi, and A. Solari, 43rd Int. Universities Power Engineering Conference (UPEC), Padua, Sept. 1-4, 2008
- Laurea *Honoris Causa* dall'Università Politecnica di Bucarest, 2008
- Membro Corrispondente Residente della Accademia delle Scienze dell'Istituto di Bologna dal 2011
- 'Golde Award' della International Conference on Lightning Protection, 2012
- CIGRE Fellowship, 2016
- Membro 'Benedettino' della Accademia delle Scienze dell'Istituto di Bologna dal 2017.

**Selected publications C.A. Nucci at September 2021**

**Journal papers**


[1] Transitioning to a low carbon society through energy communities: Lessons learned from Brazil and Italy, Barroco Fontes Cunha, F., Carani, C., Nucci, C.A., Santana Silva, M., Andrade Torres, E., Energy Research and Social Science, 2021, 75, 101994

[2] Transmission Planning with Battery-based Energy Storage Transportation for Power Systems with High Penetration of Renewable Energy, Pulazza, G., Zhang, N., Kang, C., Nucci, C.A., IEEE Transactions on Power Systems, 2021

[3] Performance analysis of a transient-based earth fault protection system for unearthed and compensated radial distribution networks, Rios Penaloza, J.D., Borghetti, A., Napolitano, F., Tossani, F., Nucci, C.A., Electric Power Systems Research, 2021, 197, 107306

[4] Direct Lightning Performance of Distribution Lines with Shield Wire Considering LEMP Effect, Ishimoto, K., Tossani, F., Napolitano, F., Borghetti, A., Nucci, C.A., IEEE Transactions on Power Delivery, 2021

[5] Influence of the presence of grounded wires on the lightning performance of a medium-voltage line, Tossani, F., Napolitano, F., Borghetti, A., Nucci, C.A. Piantini,. A., Kim, Y.-S., Choi, S.-K., Electric Power Systems Research, 2021, 196, 107206

[6] Influence of load dynamic response on the stability of microgrids during islanding transition, Rios Penaloza, J.D., Adu, J.A., Borghetti, A., Napolitano F., Tossani, F., Nucci, C.A., Electric Power Systems Research, 2021, 190, 106607

[7] Lightning protection of a multi-circuit HV-MV overhead line, Borghetti, A., Ferraz, G.M.F., Napolitano, F., Nucci, C.A., .Piantini, A., Tossani, F., Electric Power Systems Research, 2020, 180, 106119

[8] Influence of the Radial Electric Field Appraisal on Lightning-Induced Overvoltages Statistical Assessment. Tossani, F.; Napolitano, F.; Borghetti, A.; and Nucci, C., A. IEEE Transactions on Electromagnetic Compatibility, 61(3): 1-7. 2019.

[9] O.Andrisano; I. Bartolini; P. Bellavista; A. Boeri; L. Bononi; A. Borghetti; A. Brath; G.E. Corazza; A. Corradi; S. de Miranda; F. Fava; L. Foschini; G. Leoni; D. Longo; M. Milano; F. Napolitano; C.A. Nucci; G. Pasolini; M. Patella; T. Salmon Cinotti; D. Tarchi; F. Ubertini; D. Vigo, “The Need of Multidisciplinary Approaches and Engineering Tools for the Development and Implementation of the Smart City Paradigm”, Proceedings of the IEEE, Volume: 106, Issue: 4, 2018.

[10] Bak, C. L., A. Borghetti, J. Glasdam, J. Hjerrild, F. Napolitano, C. A. Nucci, and M. Paolone, "Vacuum circuit breaker modelling for the assessment of transient recovery voltages: Application to various network configurations", Electr. Power Syst. Res., vol. 156: Elsevier B.V., pp. 35–43, 2018.

[11] Borghetti, A., F. Napolitano, C. A. Nucci, and F. Tossani, "Response of distribution networks to direct and indirect lightning: Influence of surge arresters location, flashover occurrence and environmental shielding", Electr. Power Syst. Res., vol. 153: Elsevier, pp. 73–81, dec, 2017.

[12] Borghetti, A., F. Napolitano, C. A. Nucci, and F. Tossani, "Influence of the return stroke current waveform on the lightning performance of distribution lines", IEEE Transactions on Power Delivery, vol. 32, no. 4, pp. 1800-1808, Aug, 2017.

[13] Tossani, F., A. Borghetti, F. Napolitano, A. Piantini, and C. A. Nucci, "Lightning Performance of Overhead Power Distribution Lines in Urban Areas", IEEE Transactions on Power Delivery, vol. PP, no. 99, pp. 1-1, 2017.

[14] Borghetti, A., R. Bottura, M. Barbiroli, and C. A. Nucci, "Synchrophasors-based Distributed Secondary Voltage/VAR Control via Cellular Network", IEEE Trans. Smart Grid, vol. PP, no. 99, pp. 1, Jan 2017.

[15] Tossani, F., F. Napolitano, and A. Borghetti, "New Integral Formulas for the Elements of the Transient Ground Resistance Matrix of Multiconductor Lines", IEEE Trans. Electromagn. Compat., vol. PP, pp. 1–1, 2016.

[16] Tossani, F., A. Borghetti, F. Napolitano, A. Piantini, and C. A. Nucci, "Lightning Performance of Overhead Power Distribution Lines in Urban Areas", IEEE Transactions on Power Delivery, vol. PP, no. 99, pp. 1-1, 2017.

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[22] Necci, A., G. Antonioni, V. Cozzani, E. Krausmann, A. Borghetti, and C. A. Nucci, "A model for process equipment damage probability assessment due to lightning", Reliability Engineering & System Safety, vol. 115, pp. 91 - 99, 7/2013.
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[28] Belvedere, B., M. Bianchi, A. Borghetti, C. A. Nucci, M. Paolone, and A. Peretto, "A Microcontroller-Based Power Management System for Standalone Microgrids With Hybrid Power Supply", Sustainable Energy, IEEE Transactions on, vol. 3, no. 3, pp. 422 -431, july, 2012.
[29] F. Napolitano, M. Paolone, A. Borghetti, C.A. Nucci, A. Cristofolini, C. Mazzetti, F. Fiamingo, M. Marzinotto, "Models of Wind-Turbine Main-Shaft Bearings for the Development of Specific Lightning Protection Systems", IEEE Transactions on Electromagnetic Compatibility, Vol. 53, No. 1, Page(s): 99 – 107, 2011.
[30] F. Napolitano, A. Borghetti, M. Paolone and M. Bernardi, Voltage transient measurements in a distribution network correlated with data from lightning location system and from sequence of events recorders, Electric Power Systems Research, Vol. 81, No. 2, pp. 237–253 201
[31] Borghetti, C.A. Nucci, M. Paolone, G. Ciappi, A. Solari, A., “Synchronized Phasors Monitoring During the Islanding Maneuver of an Active Distribution Network”, IEEE Transactions on Smart Grid, Vol. 2, No. 1, pp. 82 – 91, 2011.
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[33] F. Napolitano, M. Paolone, A. Borghetti, C. A. Nucci, A. Cristofolini, C. Mazzetti, F. Fiamingo, M. Marzinotto, Models of Wind-Turbine Main-Shaft Bearings for the Development of Specific Lightning Protection Systems, «IEEE Transactions on EMC », 2011, 53, pp. 99 – 10

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[39] Borghetti, A.S. Morched, F. Napolitano, C.A. Nucci, M. Paolone, "Lightning-Induced Overvoltages Transferred Through Distribution Power Transformers", IEEE Trans. on Power Delivery, Vol. 24, No. 1, pp. 360-372, Jan. 2009.

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[42] Borghetti, M. Bosetti, M. Di Silvestro, C. A. Nucci, M. Paolone, L. Peretto, E. Scala, R. Tinarelli, "Assessment of Fault Location in Power Distribution Networks", Electrical Power Quality and Utilization Journal, Vol. 13, pp. 33 – 41, No. 1-2007.

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[49] M. Paolone; Peretto, L.; Sasdelli, R.; Tinarelli, R.; Bernardi, M.; Nucci, C.A., "On the Use of Data From Distributed Measurement Systems for Correlating Voltage Transients to Lightning", IEEE Trans. on Instrumentation and Measurement, pp 1202 - 1208, Volume: 53, Issue 4, August 2004.

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[53] F. Rachidi, S.L. Loyka, C.A. Nucci, M. Ianoz, "A new expression for the ground transient resistance matrix elements of multiconductor overhead transmission lines", Electric Power Systems Research, 2002.
[54] Borghetti, A. Frangioni, F. Lacalandra, C.A. Nucci, "Lagrangian heuristics based on disaggregated Bundle methods for hydrothermal unit commitment", IEEE Transactions on Power Systems, Vol. 18 No. 1, pp. 313 -323, feb. 2003.
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[58] F. Rachidi, C.A. Nucci, M. Ianoz, "Transient analysis of multiconductor lines above a lossy ground", IEEE Transactions on Power Delivery, Vol. 14, No. 1, pp. 294-302, January 1999.
[59] S. Guerrieri, C.A. Nucci, F. Rachidi, M. Rubinstein, "On the influence of elevated strike objects on directly measured and indirectly estimated lightning currents", IEEE Trans. on Power Delivery, Vol. 13, No. 4, pp. 1543-1555, Oct. 1998.
[60] F. Rachidi, C.A. Nucci, M. Ianoz, C. Mazzetti, "Response of multiconductor power lines to nearby lightning return stroke electromagnetic fields", IEEE Trans. on Power Delivery, Vol. 12, pp. 1404-1411, July 1997.
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[63] C.A. Nucci, F. Rachidi, "On the contribution of the electromagnetic field components in field-to-transmission line interaction", IEEE Trans. on Electromagnetic Compatibility, Vol. 37, no 4, pp. 505-508, November 1995.
[64] Borghetti, C.A. Nucci, G. Pasini, S. Pirani, M. Rinaldi, "Tests on self-healing metallized polypropylene capacitors for power applications", IEEE Trans. on Power delivery, Vol. 10, No. 1, pp. 556-561, Jan 1995.
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**Book Chapters**

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