

# **2018 Metrology for Archaeology and Cultural Heritage (MetroArchaeo 2018)**

**Cassino, Italy  
22 – 24 October 2018**



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# CONFERENCE PROGRAM

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**Monday, October 22**

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## ***Special Session on Non-invasive systems and techniques for "on site" monitoring and diagnosis - PART I***

**Room: Aula Magna, Cassino University Campus**

**Chairs:** Emanuele Piuze, Sapienza, University of Rome, Italy  
Livio D'Alvia, Sapienza, University of Rome, Italy

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Iraklis Giannakis, University of West London, UK  
Fabio Tosti, University of West London, UK  
Amir M. Alani, University of West London, UK

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## ***Special Session on Artificial intelligence for measurements in cultural heritage - PART I***

**Room: B 2.07 Hall, Cassino University Campus**

**Chairs:** Francesco Colace, University of Salerno, Italy  
Mario Molinara, University of Cassino and Southern Lazio, Italy

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*Claudio Marrocco, University of Cassino and Southern Lazio, Italy*  
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- N/A **Cultural Heritage Buildings Degradation Simulation**  
*Francisco Serrano, Polytechnic Institute of Leiria, Portugal*  
*João Serrano, Polytechnic Institute of Leiria, Portugal*  
*Alexandrino Gonçalves, Polytechnic Institute of Leiria, Portugal*  
*Carlos Grilo, Polytechnic Institute of Leiria, Portugal*  
*Nuno Rodrigues, Polytechnic Institute of Leiria, Portugal*  
*Virgílio Hipólito-Correia, Conimbriga Monographic Museum, Portugal*

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## **General Session PART I**

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Maria Grazia D'Urso, University of Cassino and Southern Lazio, Italy*  
*Marco Laracca, University of Cassino and Southern Lazio, Italy*

- N/A **Sources**  
*Silvana Errico, FAI member, Italy*
- N/A **Archaeology and archaeozoology: the alpine settlement of Orgères (La Thuile-Aosta, ITALY)**  
*Chiara Maria Lebole, University of Torino, Italy*  
*Chiara Mascarello, University of Torino, Italy*  
*Giorgio Di Gangi, University of Torino, Italy*
- N/A **Developing automated digitization system for cultural heritage documentation - case study**  
*Maciej Karaszewski, University of Technology Warsaw, Poland*  
*Eryk Bunsch, Museum of King Jan III's Palace at Wilanów, Poland*  
*Krzysztof Lech, University of Technology Warsaw, Poland*  
*Robert Sitnik, University of Technology Warsaw, Poland*
- N/A **Digital models for archaeological documentation in urban context. 3D surveys in the new underground of Naples (Municipio station)**  
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*Cecilia Giorgi, Institute for Technologies Applied to Cultural Heritage (ITABC) National Research Council (CNR), Italy*
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**Special Session on Metrological approaches to the study of ancient and medieval written Heritage - PART I**

**Room:** Aula Magna, Cassino University Campus

**Chairs:** Gianluca Del Mastro, Università degli Studi di Napoli Federico II, Italy

- N/A **Panorama of writing inks: from late Antiquity to the Middle Ages.**  
*Ira Rabin, University of Hamburg, Germany*
- N/A **The secrets of Herculaneum papyri revealed by synchrotron based techniques: writing and ink composition**  
*Silvia Romano, Institute for Microelectronics and Microsystems, Italy*  
*Ana Sofia Leal, Institute for Microelectronics and Microsystems, Italy*  
*Emmanuel Brun, ESRF, France*  
*Daniel Delattre, CNRS-IRHT, France*  
*Vito Mocella, Institute for Microelectronics and Microsystems, Italy*
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*Nicoletta Perini, University of Rome Tor Vergata, Italy*  
*Maria Cristina Thaller, University of Rome Tor Vergata, Italy*  
*Alessandro Rubecchini, Archivio Segreto Vaticano, Città del Vaticano*  
*Fulvio Mercuri, University of Rome Tor Vergata, Italy*  
*Silvia Orlanducci, University of Rome Tor Vergata, Italy*  
*Luciana Migliore, University of Rome Tor Vergata, Italy*

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**Special Session on Integrated Digital Survey Methodologies for the Knowledge and Enhancement of Architectural and Urban - PART I**

**Room:** B 2.07 Hall, Cassino University Campus

**Chairs:** Marco Giorgio Bevilacqua, University of Pisa, Italy

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*Marco Vitali, Politecnico di Torino, Italy*
- N/A **Spatial Data Analysis in Archaeology: A comparison of two available methods for site location**  
*Rafał Bienkowski, Polish Academy of Science, Poland*  
*Marta Lorenzon, The University of Helsinki, Finland*  
*Agnieszka Kaliszewska, Polish Academy of Science, Poland*  
*Krzysztof Leśniewski, Polish Academy of Science, Poland*
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*Melissa Lengies, Carleton University, Ottawa*  
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*Stefano Columbu, Università di Cagliari, Italy*  
*Marco Lezzerini, Università di Pisa, Italy*  
*Giorgio Verdiani, Università di Firenze, Italy*

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## ***Special Session on Artificial intelligence for measurements in cultural heritage - PART II***

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Francesco Fontanella, University of Cassino and Southern Lazio, Italy*

*Mario Molinara, University of Cassino and Southern Lazio, Italy*

**N/A e-Tourism: A Context-Aware Framework for Services Dynamic Packaging**

*Fabio Clarizia, University of Salerno, Italy*

*Francesco Colace, University of Salerno, Italy*

*Massimo De Santo, University of Salerno, Italy*

*Marco Lombardi, University of Salerno, Italy*

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*Sinem Aslan, ECLT - CCHT, Ca' Foscari University of Venice, Italy, Ege University, Turkey*

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*Marcello Pelillo, ECLT - CCHT - DAIS, Ca' Foscari University of Venice, Italy*

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*Andrea Felicetti, (DII) Università Politecnica delle Marche, Italy*

*Alessandra Albiero, CNR, Italy*

*Roberto Gabrielli, CNR, Italy*

*Roberto Pierdicca, (DICEA) Università Politecnica delle Marche, Italy*

*Marina Paolanti, (DII) Università Politecnica delle Marche, Italy*

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## ***Special Session on Using multivariate analyses to interpret lithic variability: contributions and limitations***

**Room: Aula Magna, Cassino University Campus**

**Chairs:** *Alice Leplongeon, Muséum national d'Histoire naturelle, France*

*Elena A.A. Garcea, University of Cassino and Southern Latium, Italy*

**N/A Objectifying processes: The Multivariate analyses of the Acheulean Tools in the Western Europe**

*Paula García-Medrano, British Museum, UK*

*Elías Maldonado-Garrido, British Museum, UK*

*Nick Ashton, British Museum, UK*

*Andreu Ollé, (IPHES), Spain*

**N/A Raw material exploitation and lithic variability at the MSA site of Gotera, Southern Ethiopia: technological and quantitative approaches combined**

*Elena Carletti, "La Sapienza" University of Rome, Italy*

*Marianna Fusco, "La Sapienza" University of Rome, Italy*

*Andrea Zerboni, "La Sapienza" University of Rome, Italy*

*Marina Gallinaro, "A. Desio" Università degli Studi di Milano, Italy*

*Enza Elena Spinapolice, "La Sapienza" University of Rome, Italy*

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## ***Special Session on Cultural Heritage: Measurement of Immeasurable Values - PART I***

**Room: B 2.07 Hall, Cassino University Campus**

**Chairs:** *Magdalena Żmudzińska-Nowak, Silesian University of Technology, Poland*

**N/A CULTURAL HERITAGE: Values, Approaches, Interpretation**

*Magdalena Żmudzińska-Nowak, Faculty of Architecture Silesian University of Technology, Poland*

**N/A Using modern techniques of digitalization in popularization of the Upper Silesia Heritage**

*Krzysztof Herner, The Coal Mining Museum in Zabrze, Poland*

**N/A Enforced oblivion. The heritage site and its intangible heritage tangled with the political narrative and social memory of the nations**

*Beata Piecha-van Schagen, Coal Mining Museum, Poland*

**N/A Tools versus Ideas// Methods versus Imagination**

*Antonio Castelbranco, Universidade de Lisboa, Portugal*

*Oksana Turchanina, Universidade de Lisboa, Portugal*

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### ***Special Session on Geomatic Techniques for Integrated 3D Data Acquisition, Metric Validation and Management - PART I***

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Gabriele Bitelli, Alma Mater Studiorum, University of Bologna, Italy*

*Maria Grazia D'Urso, University of Cassino and Southern Lazio, Italy*

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*Constantino Luis Marino, International Surveyance Company, Italy*

*Andrea Rotondi, (DICeM) University of Cassino and Southern Lazio, Italy*

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### ***Special Session on Integrated Digital Survey Methodologies for the Knowledge and Enhancement of Architectural and Urban - PART II***

**Room: Aula Magna, Cassino University Campus**

**Chairs:** *Marco Giorgio Bevilacqua, University of Pisa, Italy*

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*Roberto Balia, DICAAR University of Cagliari, Italy*

*Luca Piroddi, DICAAR University of Cagliari, Italy*

*Antonio Trogu, DICAAR University of Cagliari, Italy*

*Marco Utzeri, DICAAR University of Cagliari, Italy*

*Giulio Vignoli, DICAAR University of Cagliari, Italy*

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*Marco Saccucci, University of Cassino and Southern Lazio, Italy*

*Assunta Pelliccio, University of Cassino and Southern Lazio, Italy*

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### ***Special Session on Pondera Online: An international network for ancient and byzantine metrology***

**Room: B 2.07 Hall, Cassino University Campus**

**Chairs:** *Charles Doyen, FNRS / UCLouvain, Belgium*

*Maria Letizia Caldelli, Sapienza - Università di Roma, Italy*

- N/A **The Pondera Online Database**

*Doyen Charles, INCAL / CEMA, Belgium*

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### ***Special Session on Full Coverage Geophysical Prospection on Protohistoric and Roman Central Settlements in Italy***

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Frank Vermeulen, Ghent University, Belgium*

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*Federica Boschi, University of Bologna, Italy*

- N/A **Non-invasive Survey Approaches to Pre-Roman Settlement Centres in Central Adriatic Italy**

*Wieke de Neef, Department of Archaeology Ghent University, Belgium*

*Frank Vermeulen, Department of Archaeology Ghent University, Belgium*

- N/A **Urban survey on abandoned Roman sites: integrating archaeological geophysics and other topographic approaches in central-Adriatic Italy**

*Frank Vermeulen, Department of Archaeology Ghent University, Belgium*

- N/A **Integrated Geophysical Survey to Reconstruct Historical Landscape in Undug Areas of the Roman Ancient Town of Nora, Cagliari, Italy**

*Luca Piroddi, (DICAAR) University of Cagliari, Italy*

*Francesco Loddo, (DICAAR) University of Cagliari, Italy*

*Sergio Vincenzo Calcina, (DICAAR) University of Cagliari, Italy*

*Antonio Trogu, (DICAAR) University of Cagliari, Italy*

*Martina Cogoni, (DICAAR) University of Cagliari, Italy*

*Gaetano Ranieri, (DICAAR) University of Cagliari, Italy*

- N/A **The Impact of High Resolution Ground-Penetrating Radar Survey on Understanding Roman Towns: case studies from Falerii Novi and Interamna Lirenas (Lazio, Italy)**

*Lieven Verdonck, Department of Archaeology Ghent University, Belgium*

*Frank Vermeulen, Department of Archaeology Ghent University, Belgium*

*Martin Millett, Faculty of Classics University of Cambridge, UK*

*Alessandro Launaro, Faculty of Classics University of Cambridge, UK*



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## ***Special Session on Geomatic Techniques for Integrated 3D Data Acquisition, Metric Validation and Management - PART II***

**Room:** Aula Magna, Cassino University Campus

**Chairs:** *Gabriele Bitelli, Alma Mater Studiorum, University of Bologna, Italy*  
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*Roberto Pierdicca, (DICEA) Università Politecnica delle Marche, Italy*  
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*Daniele Bartolucci, Geomax s.r.l, Italy*
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*Francesca Giannone, Engineering Faculty Cusano University, Italy*  
*Jan Sevink, IBED University of Amsterdam, The Netherlands*  
*Wouter van Gorp, GIA University of Groningen, The Netherlands*  
*Martijn van Leusen, GIA University of Groningen, The Netherlands*

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## ***Special Session on Cultural Heritage: Measurement of Immeasurable Values - PART II***

**Room:** B 2.07 Hall, Cassino University Campus

**Chairs:** *Magdalena Żmudzińska-Nowak, Silesian University of Technology, Poland*

- N/A **The Museo dell'Arte della Lana in Stia: Culture and tradition of wool-making**  
*Andrea Gori, Museo Galileo, Italy*  
*Emma Angelini, Politecnico di Torino, Italy*
- N/A **"The loop of history and art – how reinterpretation creates relations?"**  
*Jerzy Wojewódka, Silesian University of Technology Faculty of Architecture, Poland*  
*Julia Giżewska, Silesian University of Technology Faculty of Architecture, Poland*
- N/A **Industrial heritage between identity and conflicts: analysis and possibilities for the industrial village of Rosignano Solvay in Tuscany**  
*Marco Giorgio Bevilacqua, DESTeC Università di Pisa, Italy*  
*Stefania Landi, DESTeC Università di Pisa, Italy*  
*Sonia Paone, Dipartimento di Scienze Politiche Università di Pisa, Italy*  
*Giulia Zanaboni, Italy*
- N/A **Emptiness as a testimony of an orphaned heritage.**  
*Karolina Chodura, Silesian University of Technology, Poland*
- N/A **Vernacular immeasurable heritage - searching for uniqueness in the old way of building**  
*Elżbieta Rdzawska-Augustin, Silesian University of Technology, Poland*

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## ***Special Session on Non-invasive systems and techniques for "on site" monitoring and diagnosis - PART II***

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Emanuele Piuze, Sapienza, University of Rome, Italy*  
*Livio D'Alvia, Sapienza, University of Rome, Italy*

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*Marialuisa Mongelli, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Irene Bellagamba, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Antonio Perozziello, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Samuele Pierattini, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Silvio Migliori, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Andrea Quintiliani, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Giovanni Bracco, Department of Energy technologies ICT DIVISION ENEA, Italy*  
*Angelo Tatì, Department of Energy technologies USER DIVISION ENEA, Italy*  
*Paola Calicchia, Institute of Marine Engineering CNR-INM, Italy*

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*Eduardo Caliano, Istemi s.a.s, Italy*  
*Carmine Napoli, Istemi s.a.s, Italy*  
*Nicolino Messuti, Istemi s.a.s, Italy*  
*Rosangela Faieta, Istemi s.a.s, Italy*

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*Francesco Lamonaca, University of Sannio, Italy*  
*Renato S. Olivito, University of Calabria, Italy*  
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*Domenico Luca Carnì, University of Calabria, Italy*  
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*Ricardo Tadeu Lopes, PEN/COPPE/UFRJ, Brazil*  
*Soraia Rodrigues Azeredo, PEN/COPPE/UFRJ, Brazil*  
*Roberto Cesareo, University di Sassari, Italy*  
*Regulo F. Jordan, Museo Señora de Cao and Fundacion Wiese, Peru*  
*Arabel Fernandez, Museo Señora de Cao and Fundacion Wiese, Peru*  
*Angel Bustamante, Universidad Nacional Mayor de San Marcos, Peru*

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**Wednesday, October 24**

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## ***General Session - PART II***

**Room: Aula Magna, Cassino University Campus**

**Chairs:** *Marilena Maniaci, University of Cassino and Southern Lazio, Italy*  
*Eugenio Polito, University of Cassino and Southern Lazio, Italy*

- 340 **In situ corrosion monitoring campaign of a weathering steel urban building**  
*Elisabetta Di Francia, Politecnico di Torino, Italy*  
*Andrea Bussetto, Politecnico di Torino, Italy*  
*Tilde De Caro, CNR, Italy*  
*Marco Parvis, Politecnico di Torino, Italy*  
*Emma Angelini, Politecnico di Torino, Italy*  
*Sabrina Grassini, Politecnico di Torino, Italy*
- 345 **Looking for the full scan: S. Zenone chapel**  
*Marco Carpicci, Sapienza University Rome, Italy*  
*Andrea Angelini, Institute for the Technologies Applied to Cultural Heritage National Research Council of Italy, Italy*
- 351 **I-MEDIA-CITIES: Automatic Metadata Enrichment of Historic Media Content**  
*Alexander Loos, Fraunhofer Institute for Digital Media Technology Metadata Department, Germany*  
*Christian Weigel, Fraunhofer Institute for Digital Media Technology Metadata Department, Germany*
- 357 **Corrosion products of Cu-based coins from the River Tiber (Rome) analysed by micro-Raman spectroscopy**  
*Tilde de Caro, CNR-ISMN, Italy*
- N/A **Dating of three kilns from Catalonia, general considerations on archaeomagnetic dating**  
*Albert Egea, Universitat Autònoma de Barcelona, Spain*  
*Lluís Casas, Universitat Autònoma de Barcelona, Spain*  
*Anna Anglisano, Universitat Autònoma de Barcelona, Spain*  
*Carlota Auguet, Universitat Autònoma de Barcelona, Spain*  
*Marc Prat, Universitat Autònoma de Barcelona, Spain*  
*Josep Burch, Universitat Autònoma de Barcelona, Spain*

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***Special Session on Metrological approaches to the study of ancient and medieval written Heritage - PART II***

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Lucio Del Corso, University of Cassino and Southern Lazio, Italy*

- 367 **Parchment disinfection treatment by ionizing radiation**  
*Monia Vadrucchi, ENEA, Italy*  
*Cristina Cicero, Tor Vergata University, Italy*  
*Fabio Borgognoni, ENEA, Italy*  
*Gabriele Ceres, Tor Vergata University, Italy*  
*Nicoletta Perini, Tor Vergata University, Italy*  
*Luciana Migliore, Tor Vergata University, Italy*  
*Fulvio Mercuri, Tor Vergata University, Italy*  
*Noemi Orazi, Tor Vergata University, Italy*  
*Stefano Paoloni, Tor Vergata University, Italy*  
*Alessandro Rubecchini, Archivio Segreto Vaticano, Vatican City*
- N/A **A signature of Pomponio Leto in the Oratory of SS. Annunziata in Cori (Latina)? The contribution of high-definition laser scanner in the study of scratched inscriptions (graffiti)**  
*Giovanni Caratelli, (ITABC) (CNR), Italy*
- 379 **Study of ancient egyptian artefacts by nondestructive laser based techniques**  
*Luisa Caneve, FSN-TECFIS-Diagnostic and Metrology Laboratory ENEA, Italy*  
*Valeria Spizzichino, FSN-TECFIS-Diagnostic and Metrology Laboratory ENEA, Italy*  
*Emiliano Antonelli, Consorzio Croma, Italy*

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**POSTER SESSION**

**Room: B 2.11 Hall, Cassino University Campus**

**Chairs:** *Marco Laracca, University of Cassino and Southern Lazio, Italy*  
*Cristina Corsi, University of Cassino and Southern Lazio, Italy*

**N/A Hypothesis of virtual reconstruction for the Sphinxes Frieze at the Trajan's Forum in Rome**

*Samuele Pierattini, ICT DIVISION ENEA, Italy*  
*Marialuisa Mongelli, ICT DIVISION ENEA, Italy*  
*Irene Bellagamba, ICT DIVISION ENEA, Italy*  
*Beatrice Calosso, ICT DIVISION ENEA, Italy*  
*Luciano De Martino, ICT DIVISION ENEA, Italy*  
*Antonio Perozziello, ICT DIVISION ENEA, Italy*  
*Daniele Visparelli, ICT DIVISION ENEA, Italy*  
*Giovanni Bracco, ICT DIVISION ENEA, Italy*  
*Andrea Quintiliani, ICT DIVISION ENEA, Italy*  
*Silvio Migliori, ICT DIVISION ENEA, Italy*  
*Marina Milella, Mercati di Traiano, Museo dei Fori Imperiali, Italy*  
*Lucrezia Ungaro, Mercati di Traiano, Museo dei Fori Imperiali, Italy*

**390 Use of the transmissibility function H for ambient vibration measurements of an archeological building**

*Ivan Roselli, Department for Sustainability ENEA, Italy*  
*Vincenzo Fioriti, Department for Sustainability ENEA, Italy*  
*Gerardo De Canio, Department for Sustainability ENEA, Italy*

**396 Compensating for Density Effect in Permittivity-Based Moisture Content Measurements on Historic Masonry Materials**

*Emanuele Piuze, Sapienza University of Rome, Italy*  
*Erika Pittella, Sapienza University of Rome, Italy*  
*Stefano Pisa, Sapienza University of Rome, Italy*  
*Andrea Cataldo, University of Salento, Italy*  
*Egidio De Benedetto, University of Salento, Italy*  
*Giuseppe Cannazza, University of Salento, Italy*  
*Paolo D'Atanasio, ENEA, Italy*  
*Alessandro Zambotti, ENEA, Italy*  
*Livio D'Alvia, Sapienza University of Rome, Italy*  
*Zaccaria Del Prete, Sapienza University of Rome, Italy*

**401 WENDY: a Wireless Environmental Monitoring Device Prototype**

*Livio D'Alvia, Sapienza University of Rome, Italy*  
*Zaccaria Del Prete, Sapienza University of Rome, Italy*

**406 Comparison between Routing Protocols for Wide Archeological Site**

*F. Leccese, Science Department of Università degli Studi "Roma Tre", Italy*  
*M. Cagnetti, Science Department of Università degli Studi "Roma Tre", Italy*  
*S. Giarnetti, Science Department of Università degli Studi "Roma Tre", Italy*  
*E. Petritoli, Science Department of Università degli Studi "Roma Tre", Italy*  
*I. Luisetto, Science Department of Università degli Studi "Roma Tre", Italy*  
*S. Tuti, Science Department of Università degli Studi "Roma Tre", Italy*  
*M. Leccisi, Science Department of Università degli Studi "Roma Tre", Italy*  
*R. Đurović-Pejčev, Institute of Pesticides and Environmental Protection, Serbiay*  
*T. Đorđević, Institute of Pesticides and Environmental Protection, Serbiay*  
*A. Tomašević, Institute of Pesticides and Environmental Protection, Serbiay*  
*V. Bursić, Institute of Pesticides and Environmental Protection, Serbiay*  
*V. Arenella, Fonderie Digitali s.r.l, Italy*  
*P. Gabriele, Fonderie Digitali s.r.l, Italy*  
*A. Pecora, Istituto per la microelettronica e microsistemi (IMM) of Consiglio Nazionale delle Ricerche, Italy*  
*L. Maiolo, Istituto per la microelettronica e microsistemi (IMM) of Consiglio Nazionale delle Ricerche, Italy*  
*E. De Francesco, SeTeL s.r.l, Italy*  
*G. Schirripa Spagnolo, Dipartimento di Matematica e Fisica of Università degli Studi "Roma Tre", Italy*  
*R. Quadarella, RoTechnology s.r.l, Italy*  
*L. Bozzi, RoTechnology s.r.l, Italy*  
*C. Formisano, Systemdesign s.r.l, Italy*

- 411 The ArchaeoTrack Project: Use of Ground-Penetrating Radar for Preventive Conservation of Buried Archaeology Towards the Development of a Virtual Museum**  
*Luca Bianchini Ciampoli, Dept. of Engineering Roma Tre University, Italy*  
*Andrea Benedetto, Dept. of Engineering Roma Tre University, Italy*  
*Fabio Tosti, University of West London, UK*
- 416 A 3D topographic network for the study and maintenance of the Insula III of Herculaneum**  
*Andrea D'Andrea, Università degli Studi di Napoli "L'Orientale", Italy*  
*Antonella Coralini, Università degli Studi di Bologna, Italy*  
*Angela Bosco, Università degli Studi di Salerno, Italy*  
*Andrea Fiorini, Università degli Studi di Bologna, Italy*  
*Rosario Valentini, Università degli Studi di Napoli "L'Orientale", Italy*
- 422 Integrated geomatic survey and virtual reality navigation engines for the historical-architectural analysis. The paradigmatic case of a "Modern Age" fortification: the Fortezza Vecchia in Livorno.**  
*Andrea Piemonte, University of Pisa, Italy*  
*Denise Ulivieri, University of Pisa, Italy*  
*Federico Capriuoli, University of Pisa, Italy*  
*Gabriella Caroti, University of Pisa, Italy*  
*Stefano Bennati, University of Pisa, Italy*
- N/A Stone artefacts from Roman age in the Southern Latium**  
*Gianluca De Rosa, University of Cassino and Southern Latium, Italy*  
*Eugenio Polito, University of Cassino and Southern Latium, Italy*
- 431 TLS and photogrammetry for 3D modelling of a low relief: case study of ancient archive, Palazzo Bo, Padua**  
*Andrea Masiero, University of Padova, Italy*  
*Alberto Guarnieri, University of Padova, Italy*  
*Francesca Fissore, University of Padova, Italy*  
*Marco Piragnolo, University of Padova, Italy*  
*Francesco Pirotti, University of Padova, Italy*  
*Antonio Vettore, University of Padova, Italy*
- 437 Mapping of archaeological evidences and 3D models for the historical reconstruction of archaeological sites**  
*Maria Grazia D'Urso, University of Cassino and Southern Lazio, Italy*  
*Ester Corsi, University of Cassino and Southern Lazio, Italy*  
*Cristina Corsi, University of Cassino and Southern Lazio, Italy*
- N/A Metrological aspects in the Nubian pottery from the collection of the University of Cassino and Southern Latium**  
*Bruna Maria Andreoni, University of Cassino and Southern Latium, Italy*
- 449 Comparison and deformation analysis of five 3D models of the Paleolithic wooden point from the Ljubljana River**  
*Enej Gucek Puhar, University of Ljubljana, Slovenia*  
*Miran Eric, Institute for the Protection of Cultural Heritage of Slovenia, Slovenia*  
*Katja Kavkler, Institute for the Protection of Cultural Heritage of Slovenia, Slovenia*  
*Anja Cramer, Romisch-Germanisches Zentralmuseum Archaeological Research Institute, Germany*  
*Kristijan Celec, INTRI d.o.o., Slovenia*  
*Lidija Korat, Slovenian National Building and Civil Engineering Institute, Slovenia*  
*Ales Jakli, University of Ljubljana, Slovenia*  
*Franc Solina, University of Ljubljana, Slovenia*



**455 Deep Transfer Learning for writer identification in medieval books**

Alessandro Bria, *University of Cassino and Southern Lazio, Italy*  
Nicole Dalia Cilia, *University of Cassino and Southern Lazio, Italy*  
Claudio De Stefano, *University of Cassino and Southern Lazio, Italy*  
Francesco Fontanella, *University of Cassino and Southern Lazio, Italy*  
Claudio Marrocco, *University of Cassino and Southern Lazio, Italy*  
Mario Molinara, *University of Cassino and Southern Lazio, Italy*  
Alessandra Scotto di Freca, *University of Cassino and Southern Lazio, Italy*  
Francesco Tortorella, *University of Cassino and Southern Lazio, Italy*

**N/A Spatial analysis of the Khartoum Variant Site 8-B- 10C (8th-6th mill. BC) at Sai Island (Sudan): Preliminary results**

Elena A.A. Garcea, *University of Cassino and Southern Lazio, Italy*  
Vincenzo Spagnolo, *University of Siena, Italy*

**466 ARCA 2.0: Automatic Recognition of Color for Archaeology through a Web-Application**

Filippo Luigi Maria Milotta, *University of Catania, Italy*  
Camillo Quattrocchi, *University of Catania, Italy*  
Filippo Stanco, *University of Catania, Italy*  
Davide Tanasi, *University of South Florida, Florida*  
Stefania Pasquale, *INFN CHNet Catania, Italy*  
Anna Maria Gueli, *University of Catania, Italy*

**N/A The digital surface model processing for detection and mapping of preparatory sketches for frescoes**

Jakub Markiewicz, *University of Technology Warsaw, Poland*  
Magdalena Pilarska, *University of Technology Warsaw, Poland*  
Agnieszka Kaliszewska, *Academy of Science Warsaw, Poland*  
Rafał Bienkowski, *Academy of Science Warsaw, Poland*

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***Special Session on Non-Destructive Analytical Approaches applied to the Study of Ancient Stone Materials***

**Room:** Aula Magna, Cassino University Campus

**Chairs:** Giulio Lucarini, *University of Cambridge, UK*  
Andrea Manzo, *University of Naples L'Orientale, Italy*

**N/A Between the sea and the river: Geochemical characterization of the obsidian artefacts from Mahal Teglinos (Kassala, Sudan), 4th - 2nd millennia BC**

Giulio Lucarini, *University of Cambridge, UK*  
Donatella Barca, *University of Calabria, Italy*  
Andrea Manzo, *University of Naples L'Orientale, Italy*

**N/A Characterization and weathering of archaeological glasses from late antique Sicily**

Anna M. Gueli, *University of Catania & INFN CHNet CT, Italy*  
Quentin Lemasson, *Centre de Recherche et de Restauration des Musées de France, France*  
Giuseppe Stella, *University of Catania, Italy*  
Stefania Pasquale, *INFN CHNet CT, Italy*  
Brice Moignard, *Centre de Recherche et de Restauration des Musées de France, France*  
Giuseppe Politi, *University of Catania & INFN CT, Italy*  
Davide Tanasi, *University of South Florida, United State of America*  
Claire Pacheco, *Centre de Recherche et de Restauration des Musées de France, France*  
Stephan Hassam, *University of South Florida, United State of America*  
Laurent Pichon, *Centre de Recherche et de Restauration des Musées de France, France*

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***Special Session on Archaeopalynology for the reconstruction of environmental and cultural landscapes***

**Room:** B 2.07 Hall, Cassino University Campus

**Chairs:** Assunta Florenzano, *University of Modena and Reggio Emilia, Italy*  
Sebastián Pérez-Díaz, *Spanish National Research Council, CSIC, Spain*

**N/A Palynology narrates climate, environment and society changes in the human history**

*Alessia Masi, Sapienza University Rome, Italy, Max Planck Institute for the Science of Human History Jena, Germany*

**N/A Reconstruction of mosaic landscapes in the Balearic Islands, Western Mediterranean**

*Gabriel Servera-Vives, Universitat de les Illes Balears Palma, Spain*

*Llorenç Picornell-Gelabert, Universitat de les Illes Balears Palma, Spain*

**N/A The “Vasca Inferiore di Noceto”: palynological data for the reconstruction of the Po Plain landscape in the Bronze Age**

*Eleonora Clò, Università di Modena e Reggio Emilia, Italy*

*Marta Mazzanti, Università di Modena e Reggio Emilia, Italy*

*Paola Torri, Università di Modena e Reggio Emilia, Italy*

*Rossella Rinaldi, Università di Modena e Reggio Emilia, Italy*

*Maria Chiara Montecchi, Università di Modena e Reggio Emilia, Italy*

*Anna Maria Mercuri, Università di Modena e Reggio Emilia, Italy*

*Mauro Cremaschi, Università Statale di Milano, Italy*

**N/A Archeobotanical investigations in the ancient city of Gonfienti, Italy (Bronze Age, Iron Age)**

*Francesco Ciani, University of Florence, Italy*

*Davide Attolini, University of Florence, Italy*

*Cristina Bellini, University of Florence, Italy*

*Miria Mori Secci, University of Florence, Italy*

*Tiziana Gonnelli, University of Florence, Italy*

*Pasquino Pallecchi, Soprintendenza Archeologia, Belle Arti e Paesaggio per la città metropolitana di Firenze e le province di Pistoia e Prato, Italy*

*Marta Mariotti Lippi, University of Florence, Italy*

**N/A Woodland-use in Tyrrhenian southern Tuscany during the Middle Ages (mid-7th-13th century AD)**

*Mauro Paolo Buonincontri, University of Siena, Italy*

*Pierluigi Pieruccini, University of Turin, Italy*

*Carmine Lubritto, University of Campania “Luigi Vanvitelli”, Italy*

*Marta Rossi, University of Siena, Italy*

*Davide Susini, University of Siena, Italy*

*Paola Ricci, University of Campania “Luigi Vanvitelli”, Italy*

*Giovanna Bianchi, University of Siena, Italy*

*Gaetano Di Pasquale, University of Naples “Federico II”, Italy*

**N/A Palynological approach to reconstruct cultural landscape evolution: case studies from South Italy**

*Assunta Florenzano, Università di Modena e Reggio Emilia, Italy*

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**General Session - PART III**

**Room: 1.09 Hall, Cassino University Campus**

**Chairs:** *Assunta Pelliccio, University of Cassino and Southern Lazio, Italy*

*Lucio Del Corso, University of Cassino and Southern Lazio, Italy*

**515 On the Suppression of Mixed Gaussian and Impulsive Noise in Color Images**

*Damian Kusnik, Silesian University of Technology Institute of Informatics, Poland*

*Bogdan Smolka, Silesian University of Technology Institute of Automatic Control, Poland*

**521 The Environmental Monitoring Campaign of the Museum of the Faculty of Archaeology of the Sohag University (Egypt)**

*Ahmed Elsayed, Politecnico di Torino, Italy*

*Luca Lombardo, Politecnico di Torino, Italy*

*Marco Parvis, Politecnico di Torino, Italy*

*Emma Angelini, Politecnico di Torino, Italy*

*Sabrina Grassini, Politecnico di Torino, Italy*



**527 Measuring and leveling roman aqueducts to estimate their flows**

*Claudio Alimonti, Sapienza University Rome, Italy*

*Valerio Baiocchi, Sapienza University Rome, Italy*

*Giorgia Bonanotte, Sapienza University Rome, Italy*

*Gabor Molnar, MTA-ELTE Geological, Geophysical and Space Science Research Group, Hungary*

**532 Analysis of items recommendations methods for heritage sites**

*Wael Jradi, Cesi and University of Rouen, France*

*Mourad Messaadia, Cesi, France*

*Anne Louis, Cesi, France*

*Laurent Heutte, University of Rouen, France*

**537 Indoor geolocation based on earth magnetic field**

*Salim Alioua, CESI, France*

*Mourad Messaadia, CESI, France*

*Mohamed-Amin Benatia, CESI, France*

*Souleyman SAHNOUN, SITU8ED, France*

*Andi Smart, University of Exeter, UK*

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***Special Session on Dating and Provenance of Ancient Artifacts: Methods, Applications and Future Perspectives***

**Room: Aula Magna, Cassino University Campus**

**Chairs:** *Enzo Ferrara, Istituto Nazionale di Ricerca Metrologica, Italy*

*Lluís Casas, Universitat Autònoma de Barcelona, Spain*

**N/A Provenance of marbles from Baths of Nero (Pisa, Italy)**

*Marco Lezzerini, Università di Pisa, Italy*

*Germana Sorrentino, Università di Pisa, Italy*

*Stefano Columbu, Università di Pisa, Italy*

*Claudia Rizzitelli, Belle Arti e Paesaggio per le province di Pisa e Livorno, Italy*

*Maria Letizia Gualandi, Università di Pisa, Italy*

**N/A Archaeomagnetic dating of two baked clay structures excavated at Libarna, Northern Italy**

*Evdokia Tema, Università degli Studi di Torino, Italy*

*Enzo Ferrara, INRiM, Italy*

*Alessandro Quercia, Soprintendenza Archeologia belle arti e paesaggio per la città metropolitana di Torino, Italy*

*Barbara Strano, Cooperativa Archeologia, Italy*

*Simone Giovanni Lerma, Soprintendenza Archeologia belle arti e paesaggio per le province di Alessandria, Asti e Cuneo, Italy*

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***Special Session on Measuring in the past: ancient instruments***

**Room: B 2.07 Hall, Cassino University Campus**

**Chairs:** *Margherita Bongiovanni, Politecnico di Torino, Italy*

*Emma Angelini, Politecnico di Torino, Italy*

**N/A Rings, Armillae and Other Spherical Instruments. The representation of the Sky in three dimensions**

*Giancarlo Truffa, Independent Scholar, Italy*

**N/A The Jacquard loom between Science and Technology**

*Emma Angelini, Politecnico di Torino, Italy*

*Andrea Gori, Museo Galileo, Italy*

**564 Curioni and the experimental measurements on the strength of materials in the Scuola di applicazione per gli ingegneri of Turin**

*Federica Stella, Politecnico di Torino, Italy*

*Margherita Bongiovanni, Politecnico di Torino, Italy*

*Mauro Borri-Brunetto, Politecnico di Torino, Italy*

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***Special Session on Technological information and learning patterns in pottery production***

**Room:** 1.09 Hall, Cassino University Campus

**Chairs:** *Elena A.A. Garcea, University of Cassino and Southern Latium, Italy*

*Giulia D'Ercole, Ludwig Maximilians-University Munich, Germany*

**N/A The Emergence of Pottery in the Middle Nile Valley: Technology and Function of Early Holocene Complexes from Sudan**

*Giulia D'Ercole, Institute of Egyptology and Coptology Ludwig-Maximilians University, Germany*

*Elena A.A. Garcea, Institute of Egyptology and Coptology Ludwig-Maximilians University, Germany*

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