

PROGRAMME

Final Programme

QIRT 2024

17th Quantitative InfraRed Thermography Conference



Zagreb, Croatia, 1 - 5 July 2024

Sponsors



Scientific Partnerships

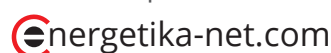


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Local Organisation

Local Programme Organiser

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Proceedings

You can access the collection of papers with summaries, papers and presentations at the following link:

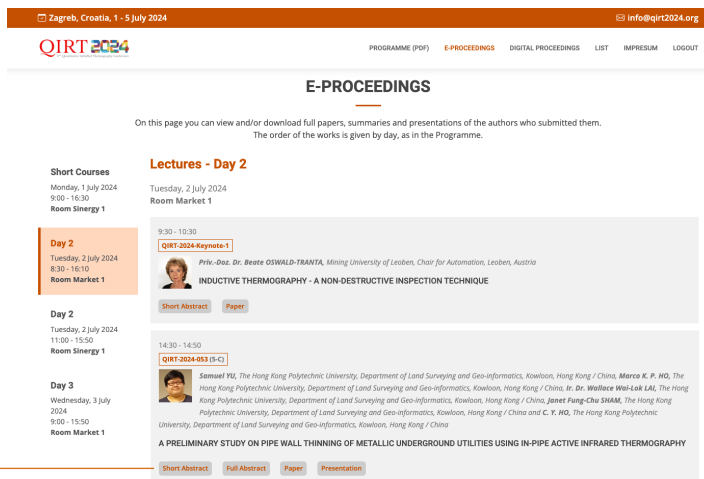
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To enter the Proceedings, you will need a **username** and **password**, which you can find on the accreditation or request it from the Conference Secretariat at the **info desk** or by emailing to: info@qirt2024.org.

E-PROCEEDINGS

On this page you can **view and/or download full papers**, abstracts and presentations of the authors who submitted them.

The order of the papers is given by day, as in the Programme.



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On this page you can browse the complete Proceedings. You can also see the full abstract, the full **paper** and the lecturer's **presentation**. You can **search** the publication by any term as well as by content. You can download and print it. You can add your own **notes**.

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LIST OF PAPERS

On this page, there is a table of all papers ordered by code (order of application).

The codes in the first column are linked to the submitted abstract.

The nominations for the **Grinzato Award** and the **Student Award** for the best paper were also marked.

Schedule of Topics

Please, indicate the topic for the application of a scientific paper, according to the following list of topics:

Session 1

- 1-A State-of-the-art and evolution in the field of infrared scanners and imaging systems allowing quantitative measurements.
- 1-B Data acquisition and processing systems associated with infrared scanners and imaging systems.

Session 2

- 2-A Calibration and characterisation of infrared cameras and related topics like certification, standardisation, validation, emissivity determination, absorption in media, translucent media, spurious radiations, three dimensionality of observed objects.

Session 3

- 3-A Characterisation of optical and further heat sources for active thermography.

Session 4

- 4-A Analytical and numerical modeling, data reduction, signal and image processing.
- 4-B Artificial intelligence related to infrared thermography.

Session 5

Application of infrared thermography to radiometry, thermometry, and physical parameters identification and quantification in all fields:

- 5-A fluid mechanics
- 5-B solid mechanics, structures and material sciences
- 5-C nondestructive evaluations
- 5-D electromagnetism
- 5-E medicine and biomedical sciences
- 5-F remote sensing, environment monitoring, industrial processes, multiscale, multispectral and other.

Room Sinergy 1

Time	Lecture	Lecturer
10:00 - 11:00	Basics of Thermography	<i>Xavier MALDAGUE</i>
11:00 - 12:00	Applications of Artificial Intelligence and Learning Systems in Infrared Techniques - Theory, Practice and Examples	<i>Bogusław WIĘCEK</i>
12:00 - 12:30	Coffee Break	
12:30 - 13:30	Thermal Monitoring of Structures and Systems by Infrared Thermography in Outdoor Conditions	<i>Jean DUMOULIN</i>
13:30 - 14:30	Lunch	
14:30 - 15:30	Seeing the Unseen: Infrared Vision for Studying Cultural Heritage - A Research Field Evolving All The Time Thanks to the Use of Mock-Ups	<i>Stefano SFARRA</i>
15:30 - 16:30	Biomedical applications of infrared Thermography	<i>Gunther STEENACKERS</i>
16:30 - 17:30	Discussion	

Room Market 1

Time	Lecture	Lecturer	Session
8:30 – 9:00	Registration		
9:00 – 9:30	Opening Ceremony		
	<ul style="list-style-type: none"> • Introductory Word from the Conference Secretariat • Welcome Speeches: <i>Xavier MALDAGUE</i>, Chair of QIRT Conferences Steering Committee <i>Zdenko TONKOVIĆ</i>, Dean of the Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb <i>Tomislav KIŠIČEK</i>, Vice-dean of the Faculty of Civil Engineering of the University of Zagreb • Introductory Word from the Local Organizer: <i>Srećko ŠVAIĆ</i> • Information about QIRT 2026 Conference: <i>Gennaro CARDONE</i> 		
9:30 – 10:30	Inductive Thermography - A Non-Destructive Inspection Technique	<i>Beate OSWALD-TRANTA</i>	Keynote
10:30 – 11:00	Coffee Break, Poster and Exhibition		

Room Market 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	003	Increasing the Effective Sampling Rate of Thermographic Imaging for Thermal Transient analysis	<i>Simon H. ANKE et. al.</i>	1-A
11:20 – 11:40	Discussion			
11:40 – 12:00	046	Imaging in NIR spectral range with a single detector using Hadamard matrix pattern-based SLM	<i>Krzysztof SZAJEWSKI et. al.</i>	1-A
12:00 – 13:00	Lunch			
13:00 – 13:20	026	New Compensation Method for Lock-in Thermography to Eliminate Lateral Heat Flux	<i>Jonas HUFERT et. al.</i>	1-A
13:20 – 13:40	058	Fundamentals of Quantitative Temperature Determination During Laser Powder Bed Fusion of Metals (PBF-LB/M) via Hyperspectral Thermography	<i>Philipp Peter BREESE et. al.</i>	1-A
13:40 – 14:00	072	Automated Multi-Spectral Inspection for Damage Detection of Aeronautical Composite Materials	<i>Georges GIAKOUMAKIS et. al.</i>	1-B
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	078	Robotic-Assisted 3D Scanning and Laser Thermography for Crack Inspection on Complex Components	<i>Philipp Daniel HIRSCH et. al.</i>	1-B
14:50 – 15:10	082	Complementary Use of Vibrothermography and Flying Spot Thermography to Characterize Fatigue Cracks in Metallic Samples	<i>Ludovic GAVÉRINA et. al.</i>	3-A
15:10 – 15:30	Discussion			

The Maistra City Vibes International Hotel

18:30 – 20:00 **Welcome Cocktail**
(dress code: casual)

Room Sinergy 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	012	MWIR Camera Calibration for CO ₂ Quantification	<i>Matheus PEREIRA PORTO et. al.</i>	2-A
11:20 – 11:40	014	The Indirect Thermographic Measurement of the Transistor Die Temperature Made Through the Viewfinder	<i>Krzysztof DZIARSKI et. al.</i>	2-A
11:40 – 12:00	028	Development of Active Thermography for NDT Applications through Standardisation	<i>Samuel MAILLARD et. al.</i>	2-A
12:00 – 13:00	Lunch			
13:00 – 13:20	052	Improved Algorithm for True Temperature Measurement Using Dual-Wavelength Thermography	<i>Denise REICHEL et. al.</i>	2-A
13:20 – 13:40	005	Model-based Deep Learning for Automated Defect Detection in Composites	<i>Mathias KERSEMANS et. al.</i>	4-B
13:40 – 14:00	008	An Ontology for Thermophysical Properties Estimation and Defects Characterization in the Field of Infrared Thermography	<i>Malo LECORGNE et. al.</i>	4-B
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	025	Defect Characterization in IR-Thermography using Convolutional Neural Networks	<i>Marc KREUTZBRUCK et. al.</i>	4-B
14:50 – 15:10	027	Detection of Perforators for DIEP Flap Breast Reconstruction Using Deep Learning on Thermal Images	<i>Gunther STEENACKERS et. al.</i>	4-B
15:10 – 15:30	057	Thermal Image-Based Wheel-Rail Contact Classification and Analysis Using Convolutional Neural Networks	<i>Marcin SŁOWIŃSKI et. al.</i>	4-B

The Maistra City Vibes International Hotel

18:30 – 20:00 **Welcome Cocktail**
(dress code: casual)

Room Market 1

Time	Lecture	Lecturer	Session
9:00 – 9:30	Registration		
9:30 – 10:30	NDE and Deep Learning: Fashion Trend or the Future?	Roman G. MAEV	Keynote
10:30 – 11:00	Coffee Break, Poster and Exhibition		

Room Market 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	085	Improving the NETD of High-Speed Infrared Cameras Through Temporal Averaging	Hajera KOUSER <i>et. al.</i>	4-A
11:20 – 11:40	020	Three-Dimensional Convolution Assisted Thermal Image Generation for Defect Detection in Composite Materials	Fumin WANG <i>et. al.</i>	4-A
11:40 – 12:00	038	Thermographic Detection of Underground Cavities. Thermal Modelling and Experimental Results	Jean-Claude KRAPEZ	4-A
12:00 – 13:00	Lunch			
13:00 – 13:20	042	Active Thermal Super-Resolution Based on Laser Flying Spot Technique Coupled with IR Thermography: Extension Into 2D Analysis	Marie-Marthe GROZ <i>et. al.</i>	4-A
13:20 – 13:40	049	Enhancing Defect Detection and Classification in Low-Conductive Materials through Principal Component Analysis in Infrared Thermography	Yusra ABDULRAHMAN <i>et. al.</i>	4-A
13:40 – 14:00	004	Estimation of the Thermal Wave Reflection Coefficient of Subsurface Interfaces Using the Virtual Wave Concept	Lukas GAHLEITNER <i>et. al.</i>	4-A
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	077	Practical Study on the Thermographic Detectability of Internal Defects Using Temporally Structured Laser Heating	Julien LECOMPAGNON <i>et. al.</i>	4-A
14:50 – 15:10	080	Dimensionless Sensitivity Analysis of Lock-In Infrared Thermography used for Quantitative Characterization of Delaminations	Javier RODRÍGUEZ-ASEGUINOLAZA <i>et. al.</i>	4-A
15:10 – 15:30	063	Tomography in Infrared Thermography: Frequency Multiplexed Photothermal Correlation Tomography	Hai ZHANG <i>et. al.</i>	2-A

The Maistra City Vibes International Hotel

12:00 – 13:00 **International Scientific Committee Meeting with lunch**
(only for the ISC members)

City of Zagreb

19:00 **Organized Tour of Zagreb**
(tour is free of charge, but with limited number of participants)

Room Sinergy 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	069	Detection of Objects with Different Thermal Signatures in Thermograms Using Machine Learning	<i>Mariusz KACZMAREK et. al.</i>	4-B
11:20 – 11:40	032	Monitoring of Moving Rail-Road Cars through Infrared Thermal Vision: Study of Hot Box Detection on Reconstructed Scenes with and without Deep Learning Approaches	<i>Boualem MERAINANI et. al.</i>	4-B
11:40 – 12:00	040	Automatic Detection Based on Deep Learning of Small Cracks in Induction Thermography using Images from FEM Simulation Models	<i>Olaia ANTERO et. al.</i>	4-B
12:00 – 13:00	Lunch			
13:00 – 13:20	055	Quantification of Refrigerant Flow Maldistribution in Evaporators with IR Images	<i>Aude LECARDONNEL et. al.</i>	5-A
13:20 – 13:40	079	Experimental Investigation of Boundary Layer Transition through Infrared Thermography	<i>Piergiorgio SCAVELLA et. al.</i>	5-A
13:40 – 14:00	013	Feasibility of Applying Infrared Thermal Imaging for Home Monitoring of Arthritis in Children	<i>Dan (Yongdong) ZHAO et. al.</i>	5-E
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	022	Preliminary Assessment of the Health Status of Patients with Parkinson's Disease by means of InfraRed Thermography	<i>Antonio CANNULI et. al.</i>	5-E
14:50 – 15:10	073	Investigation of Lightning-Strike Induced Damage in Carbon Fiber Laminate Composites Based on IR Thermography Measurements	<i>Jean-Michel ROCHE et. al.</i>	5-C
15:10 – 15:30	093	Novel Infrared Methodologies for Material Emissivity and Temperature Determination for Space Atmospheric Re-entry	<i>Mario DE CESARE et. al.</i>	5-C

The Maistra City Vibes International Hotel

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City of Zagreb

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Room Market 1

Time	Lecture	Lecturer	Session
9:00 – 9:30	Registration		
9:30 – 10:30	IR Thermography as a Tool in MRO Activities for a Sustainable Aircraft	<i>Nicolas P. AVDELIDIS</i>	Keynote
10:30 – 11:00	Coffee Break, Poster and Exhibition		

Room Market 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	096	Application of Fuzzy Logic in Isothermal Surface Boundary Determination	<i>Hrvoje GLAVAŠ et. al.</i>	4-A
11:20 – 11:40	054	Cure Monitoring of Fibre Reinforced Composites Using Infrared Imaging and Data Assimilation	<i>Gernot MAYR et. al.</i>	5-F
11:40 – 12:00	059	Test Rig for Investigation of Innovative Indirect Regenerative Evaporative Cooling technology for Electronics using IR Thermography	<i>Dmytro LEVCHENKO et. al.</i>	5-F
12:00 – 13:00	Lunch			
13:00 – 13:20	018	Robust Temperature Measurement in Dynamic Environments through Detection and Tracking	<i>Rubén USAMENTIAGA et. al.</i>	5-F
13:20 – 13:40	065	Inspection of Deep-Seated Fire Within Waste Disposal Site by Infrared Thermography	<i>Ivan GABRIJEL et. al.</i>	5-F
13:40 – 14:00	086	Measuring Wheel-Rail Wear in Real Operation using Thermal Imaging	<i>Tomasz STAŚKIEWICZ</i>	5-B
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	029	Thermographic Investigation of the Anisotropic Behaviour of Additively Manufactured AISI316 Steel using DED-Arc	<i>Rainer KRANKENHAGEN et. al.</i>	5-B
14:50 – 15:10	092	Microwave Active Thermography (MIRT) for Rebars Detection and Evaluation in Reinforced Concrete Structures	<i>Barbara GROCHOWALSKA (SZYMANIK) et. al.</i>	5-B
15:10 – 15:30	044	Tensile Loading of Ti-25Nb-0.7O Shape Memory Alloy Monitored by Infrared Thermography and Digital Image Correlation	<i>Karol M. GOLASIŃSKI et. al.</i>	5-B

Golf & Country Club Zagreb

- 18:00 – 22:00
- **Gala Diner**
 - **Awarding of Honoray Member Certificates**
 - **Announcement of QIRT Asia 2025 and QIRT 2026**
- (dress code: casual,
bus transfer from the Conference Venue and back is organized)

Room Sinergy 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	006	Thermographic Inspection of Woven Fabric Composites in Pseudo-Wavenumber Domain	<i>Mathias KERSEMANS et. al.</i>	5-C
11:20 – 11:40	010	Resolution of Multiple Delaminations Using Lock-In Infrared Thermography	<i>Arantza MENDIOROZ et. al.</i>	5-C
11:40 – 12:00	021	Reconstruction of Buried Thermal Sources Using a Particle Filtering Approach in the Context of Non-Destructive Testing	<i>Hugo BOUE et. al.</i>	5-C
12:00 – 13:00	Lunch			
13:00 – 13:20	030	Tracking of Car Accident Histories by Discriminating OEM and Repaired Coating Areas through Active Thermography	<i>Yongmin KIM et. al.</i>	5-C
13:20 – 13:40	056	Lock-in Thermography With Hybrid Excitation Source for Defect Detection in Composite Materials	<i>Barbara GROCHOWALSKA (SZYMANIK)</i>	5-C
13:40 – 14:00	035	Infrared Thermography for Measuring Surface Heat Flux through Building Envelope	<i>Mergim GAŠI et. al.</i>	5-C
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	036	Benefits of Digital Twin of Robotized Infrared Flash Thermography for Offline Programming	<i>Camille DUBOS et. al.</i>	5-C
14:50 – 15:10	097	Using IR Thermography to Monitor Moisture Diffusion and Capillary Rising Damp in Clay Bricks	<i>Erika GUOLO et. al.</i>	5-C
15:10 – 15:30	007	Phase Inversion Thermography for Sensitive and Depth-Resolved Inspection	<i>Mathias KERSEMANS et. al.</i>	5-C

Golf & Country Club Zagreb

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Room Market 1

Time	Lecture	Lecturer	Session
9:00 – 9:30	Registration		
9:30 – 10:30	Astronomers and AI in the Big Data Era	Željko IVEZIĆ	Keynote
10:30 – 11:00	Coffee Break, Poster and Exhibition		

Room Market 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	064	Advances in Non-Destructive Analysis of Biodegradable Mg AZ31 Magnesium Alloys through Pulsed Laser Thermography	Giuseppe DELL'AVVOCATO et. al.	5-B
11:20 – 11:40	084	DPL Non-Fourier Heat Transfer Modelling in Porous Materials and Validation using IR Measurement	Maria STRĄKOWSKA et. al.	5-B
11:40 – 12:00	087	Modelling the Thermographic Inspection of Structures with Finite Elements Method	Benjamin MÉTHOT et. al.	5-F
12:00 – 13:00	Lunch			
13:00 – 13:20	089	Using Infrared Thermography for Thermal Diffusivity Testing of Concrete	Bojan MILOVANOVIĆ et. al.	5-B
13:20 – 13:40	043	Infrared Thermography Characterization of Smart Multi-Functional Materials for the Aeronautical Industry	Pablo VENEGAS et. al.	5-B
13:40 – 14:00	075	Anisotropy Investigation of a Single Crystal Superalloy Using Laser-Spot Infrared Thermography	Sruthi Krishna KUNJI PURAYIL et. al.	5-B
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	053	A Preliminary Study on Pipe Wall Thinning of Metallic Underground Utilities Using In-Pipe Active Infrared Thermography	Samuel YU et. al.	5-C
14:50 – 15:10	095	Comparison between the Performance of Pulsed, Pulsed Phase and Pulsed Eddy Current Thermography Modalities Regarding to the Detection of Artificial Defects in CFRP with Machine Learning for Classification	Marcella GROSSO LIMA et. al.	5-C

Room Market 1

- 15:15 – 15:45
- **Awarding of Grinzato and Student Award**
 - **Closing Ceremony**

Room Sinergy 1

Time	Code	Lecture	Lecturer	Session
11:00 – 11:20	066	Smart and Mobile Thermal Tomography System for Non-Destructive Evaluation of Composite Components	<i>Günther MAYR et. al.</i>	5-C
11:20 – 11:40	002	Application of Laser Heating Thermography for the Inspection of New Composite Aeronautical materials	<i>Stéphane AMIEL et. al.</i>	5-C
11:40 – 12:00	061	A Novel Approach to Create a Rail Specimen with Surface Cracks for the Calibration of an Inductive Thermography Inspection Setup	<i>Christoph TUSCHL et. al.</i>	5-C
12:00 – 13:00	Lunch			
13:00 – 13:20	067	Assessment of Indoor Microclimate and Thermal Comfort in Buildings: A Thermographic Approach	<i>Giovanni FERRARINI et. al.</i>	5-C
13:20 – 13:40	068	Towards Comprehensive Quantification: Preliminary Laser Thermography Procedure in Probeless Friction Stir Spot (P-FSSW) Aluminium Welding	<i>Giuseppe DELL'AVVOCATO et. al.</i>	5-C
13:40 – 14:00	074	Increasing Scanning Speed During Induction Thermography Tests: Simulations and Experimental Tests to Investigate Crack Detectability	<i>Ester D'ACCARDI et. al.</i>	5-C
14:00 – 14:30	Coffee Break, Poster and Exhibition			
14:30 – 14:50	031	Using Infrared Thermography to Determine the Excessive Moisture in Earthquake Damaged Heritage Buildings	<i>Domagoj TKALČIĆ et. al.</i>	5-C
14:50 – 15:10	039	Infrared Thermography for Quality Control of HMA Paving – Zagreb Airport Case Study	<i>Josipa DOMITROVIĆ et. al.</i>	5-C

Room Market 1

- 15:15 – 15:45
- **Awarding of Grinzato and Student Award**
 - **Closing Ceremony**

Panel	Code	Lecture	Lecturer	Session
P-02	062	Fusion of Infrared and Terahertz Imaging for Non-Invasive Inspection of Marqueteries Coupled with Finite Element Analyses	<i>Hai ZHANG et. al.</i>	4-A
P-03	017	Advanced Fibre Orientation Detection in Composite Materials Using Laser Spot Thermography and Physics-Informed Neural Networks	<i>Wei-Shiang LIN et. al.</i>	4-B
P-04	088	Uniform Manifold Approximation and Projection for Breast Thermography	<i>Leonardo Daniel BUITRAGO et. al.</i>	4-B
P-05	090	InfraRed Thermography-based Super-Resolution and Automatic Recognition of Thermal Barrier Coating Delamination using Deep Learning in Gas Turbine Blade	<i>Wontae KIM et. al.</i>	4-B
P-06	098	Physics-Based Model Assisted Age Prediction of Real-Serviced Thermal Barrier Coated Samples Using Infrared Thermography	<i>Sruthi Krishna KUNJI PURAYIL et. al.</i>	4-B
P-07	104	Convective Heat Transfer Coefficient Reduction in a Turbulent Boundary Layer Developing on a Riblets Surface	<i>Antonio MAZZARA et. al.</i>	5-A
P-09	011	Sizing Horizontal Inner Heat Sources Using Lock-In Inductive Infrared Thermography	<i>Arantza MENDIOROZ et. al.</i>	5-C
P-10	037	Selection of Thresholding for Defect Detection and Size Estimation of Building Exterior Wall using Passive Infrared Thermography	<i>Lydia Sin Yau CHIU et. al.</i>	5-C
P-11	101	Research on Infrared Nondestructive Testing and Defect Quantification of Composite Materials	<i>Zijun WANG et. al.</i>	5-C
P-12	102	Advancing Quality Control in Composite Manufacturing: A Study on Fibre Orientation Detection in CFRP Laminates via Induction Thermography	<i>Renil Thomas KIDANGAN et. al.</i>	5-C
P-13	081	Temporal Stability of Contralateral Thermal Asymmetry in Lower Extremities of Subjects Free of Metabolic Diseases	<i>Crescencio GARCÍA-SEGUNDO et. al.</i>	5-E
P-16	060	Realtime Temperature Measurement of Semiconductor Junctions in Operation	<i>Robert OLBRYCHT et. al.</i>	5-F
P-17	091	Analysis of Thermal Field During TIG Welding of Titanium in Ar-He Mixture Shielding	<i>Ivica GARAŠIĆ et. al.</i>	5-F
P-18	094	Infrared Thermography for Automated Fiber Placement Measurement	<i>Abderezak AOUALI et. al.</i>	5-F
P-19	103	Towards the Dynamic Characterization of Near-Surface Lithology in Northern Sahara Region by Satellite Thermography (First Results)	<i>Roberto RICCIU et. al.</i>	5-F

Publication of Best Papers

After the Conference, all papers will be evaluated by the QIRT Committees and the best papers will be published in the **QIRT Journal**. These papers should not already be published in any conference proceedings or journals and the work should be original and new. A peer review process by independent, anonymous expert referees will be performed.

Student Award

The best student paper will be honoured with the Student Award. During abstract submission you can choose if your abstract is suitable for the Student Award.

The presenting student must be enrolled at a university (or similar institution, e.g. polytechnic) and the presented work must be developed within their bachelor, master or doctoral thesis. Only one submission per student candidate is accepted into the competition.

Grinzato Award

The scientific paper will be honoured by the **Grinzato Award**. The nominees for the Grinzato Award will be announced by the steering Committee according to the rating of the submitted abstracts.

QIRT Short Courses

In addition to the Main Technical Program, the Conference will be complemented by **one-day Short Courses** on **Monday, 1 July 2024**, taking place in the Conference Center at the Maistra City Vibes International Hotel.

Hotel Reservation

We will arrange special conditions in different hotels. Information and booking informations will be put at the Conference website on time.

Venue

THE MAISTRA CITY VIBES INTERNATIONAL HOTEL, Miramarska cesta 24, 10 000 Zagreb, Croatia

The Maistra City Vibes International Hotel is a 4-star hotel situated in a prime location in the centre of Zagreb.

The Maistra City Vibes International Hotel is an ideal place to organize events such as meetings, seminars, conferences as well as banquets. All conference facilities have daylight, built in airconditioning and the most modern technical equipment.

Hotel features 6 flexible and functional meeting rooms, modern AV equipment, courteous and professional staff and has famous gourmet breaks during all sorts of business events.





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