



*5th International Tribology Symposium of IFToMM
International Federation for the Promotion of
Mechanism and Machine Science*

INTERNATIONAL
TRIBOLOGY SYMPOSIUM
SALERNO 2024



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TRIBOLOGY SYMPOSIUM
SALERNO 2024

ITS-IFTToMM 2024
5th International Tribology Symposium of IFToMM

May 6-7th 2024	Lloyd's Baia Hotel Vietri sul mare (SA)	May 8th 2024	UNISA Salerno
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jointly with
9th AIT (Italian Tribology Association)
Workshop "Tribology and Industry"

General Program

<https://www.iftommits2024.it/>

Version 4th April 2024

- *May 6th -Lloyd's Baia Hotel*

Activity	Time
Registration	8.30-9.30
Opening Ceremony	9.30-10.00
Plenary lectures (2)	10.00-11.20
Coffee break	11.20-11.40
Morning Sessions Room F (4)	11.45-13.05
Buffet lunch	13.15-14:30
Afternoon Sessions Room F (6)	14.40-16.40
Salerno city visit	17.30

- *May 7th - Lloyd's Baia Hotel*

Activity	Time
Plenary lectures (2)	9.10-10.30
Coffee break	10.30-10.45
Morning Sessions Room F (7)	10.50-13.10
Morning Sessions Room D (7)	10.50-13.10
Buffet lunch	13.15-14.00
IFTToMM Tribology Technical Committee blended meeting	14.00-14.30
Afternoon Sessions Room F (5)	14.40-16.20
Afternoon Sessions Room D (5)	14.40-16.20
Coffee break	16.20-16.35
Afternoon Sessions Room F (5)	16.40-18.20
Afternoon Sessions Room D (5)	16.40-18.20
Gala Dinner at Lloyd's Baia Hotel	19.30

- *May 8th -Fondazione UNISA - Campus in Fisciano of the Univ. of Salerno*

5th ITS-IFTToMM
(<https://www.iftommits2024.it/>)

Activity	Time
Bus from The Lloyd's Baia Hotel to UNISA	8.30
Welcome to UNISA Campus	9.15-9.45
ITS-IFTToMM Morning Session-GAIT (AIMETA Group of Tribology) Rooms 1	9.50.00-11.30
Coffee break	11.30-11.45
ITS-IFTToMM Morning Sessions Room 1	11.50-13.30
Lunch UNISA	13.45-14.45
Closing Ceremony and awards	15.00-16.00
Bus from UNISA to The Lloyd's Baia Hotel	17.00

9th AIT Workshop
(<https://www.aitrib.it/en/courses-and-conferences>)

Activity	Time
9 th Workshop AIT registration	10.00-10.30
AIT Board meeting	10.30-11.30
AIT General assembly	11.30-13.00
Lunch UNISA joined with ITS	13.00-14.30
Closing Ceremony and awards	14.45-16.00
9 th AIT Workshop technical sessions Room 1 (10)	16.00-18.30
AIT social dinner	20.00



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ITS-IFTToMM 2024
5th International Tribology Symposium of IFToMM

May 6-7th | Lloyd's Baia Hotel | **May 8th** | UNISA
2024 | Vietri sul mare (SA) | 2024 | Salerno

jointly with
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Detailed Program

<https://www.iftommits2024.it/>

Version 4th April 2024



Lloyd's Baia Hotel

8.30-9.30	REGISTRATION	Hall
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9.30-10.00	OPENING CEREMONY	Room F
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<i>Plenary Lectures</i>		Room F
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Chairperson:

TIME	KEYNOTE SPEAKER	TITLE
10.00-10.40	<i>Prof. Dae-Eun Kim</i>	Design for Tribology in Engineering Practice
10.40-11.20	<i>Prof. Andreas Almqvist</i>	Multi-Scale Insights into the Interplay of Ski, Snow, and Skier Dynamics

11.20-11.40	Coffee break	
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SESSION 1			Room F
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Bearings

Chairperson:

TIME	PAPER ID	AUTHORS	TITLE
11.45-12.05	004	<i>Colombo, Goti, Lentini, Trivella</i>	Optimization of a spiral grooved thrust bearing
12.05-12.25	005	<i>Colombo, Goti, Lentini, Raparelli</i>	Investigation on the static characteristics of a dynamic gas thrust bearing with spiral grooves for a small-scale high-speed application
12.25-12.45	030	<i>Chatterton, Riva, Gheller, Dassi, Vania, Pennacchi</i>	Temperature profile at pad's leading edge of a tilting-pad journal bearing: CFD modeling and experimental validation
12.45 -13.05	053	<i>König, Wirsing, Klinghart</i>	Acoustic Emission-based detection of starved conditions to prevent adhesive wear damage in journal bearings

13.15-14.30	Buffet Lunch	
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SESSION 2 Industrial applications Chairperson:		Room F
TIME		
14.40-15.40	Sponsors, to be defined	

SESSION 3 Materials and coatings Chairperson:			Room F
TIME	PAPER ID	AUTHORS	TITLE
15.40-16.00	009	<i>Wu, Umehara, Tokoroyama, Murashima, Zhang</i>	Development of low-friction technology for treating nitrogen-containing diamond-like carbon coatings in ambient air using dielectric barrier discharge
16.00-16.20	011	<i>Maglione, Avolio, Napolitano Dell'Annunziata, Ruffini, Genovese</i>	Non-Invasive Experimental Investigation for Time-Temperature Superposition Shift Factor Estimation in Viscoelastic Materials Characterization
16.20-16.40	024	<i>Lee, Kim, Jang, Umehara</i>	Tribological behavior of ta-C coating originated by surface defects

17.30	Salerno city center visit
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<i>Plenary Lectures</i>		Room F
Chairperson:		
TIME	KEYNOTE SPEAKER	TITLE
9.10-9.50	<i>Prof. Giuseppe Carbone</i>	Improving the sustainability of engineering technologies and devices by tailoring their surfaces tribological properties
9.50-10.30	<i>Prof. Mitjan Kalin</i>	Interpreting friction behaviour through real contact area analyses

10.30-10.45	Coffee break
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<i>SESSION 4</i> Friction, corrosion and wear			Room F
Chairperson:			
TIME	PAPER ID	AUTHORS	TITLE
10.50-11.10	007	<i>Logozzo, Valigi</i>	Experimental wear analysis on mechanical seals for concrete mixers
11.10-11.30	008	<i>Zhang, Feng, Umehara, Tokoroyama</i>	Clarification of the corrosion and frictional behavior of nitrogen-doped ta-C coating in nitride acid solution
11.30-11.50	014	<i>Chen, jiang, Tang, Liu, Yan, Wei, Qian</i>	Advancing tribological understanding: insights into in-plane wear and edge friction mechanisms of graphene and its derivatives
11.50 -12.10	017	<i>Jang, Kousaka, Umehara</i>	Friction and Wear Properties of Super-hydrophobic Diamond-like Carbon (DLC) Coating
12.10-12.30	018	<i>Solasa, Venkataraman, Roy Choudhury, Bhattacharyya</i>	Friction coefficient of the PVD-AlCrN coated cemented carbide and hardened steel tribo-pair under dry sliding
12.30-12.50	049	<i>Grabovic, Ciulli</i>	Pin-on-Disk Wear Investigation on Bronze Coating – Part 1: Definition of the Test Methodology
12.50-13.10	050	<i>Grabovic, Ciulli</i>	Pin-on-Disk Wear Investigation on Bronze Coating – Part 2: Analysis of the Experimental Results



The Lloyd's Baia Hotel

SESSION 5

Design and optimization of mechanical systems

Chairperson:

Room D

TIME	PAPER ID	AUTHORS	TITLE
10.50-11.10	012	<i>Avolio, Napolitano Dell'Annunziata, Ruffini, Genovese, Lenzi</i>	Topology Measurements Analysis Between Road Surfaces and their Silicone Replicas
11.10-11.30	013	<i>Stefanelli, Sakhnevych, Timpone, Farroni, Barbaro</i>	An Enhanced Greenwood-Williamson Contact Model for the Evaluation of Local Tire/Road Contact Area
11.30-11.50	016	<i>Lenzi, Farroni, Sakhnevych, Timpone, Genovese</i>	Laboratory Linear Friction Tester: Design and Results
11.50 -12.10	023	<i>Barbaro, Romagnuolo, Farroni, Timpone, Sakhnevych</i>	Necessity of the tire temperature-dependant parameters in vehicle virtual sensing
12.10-12.30	040	<i>Pappalardo, Genel, La Regina, Guida</i>	Dynamic Simulation of the Multibody Model of the Rabinowicz Test for Friction Modeling in the SIMSCAPE Environment
12.30-12.50	041	<i>Pappalardo, La Regina, Genel, Guida</i>	Analysis of the Friction Impact on the Performance of the Linear Quadratic Regulator Controller Applied to the Multibody Model of the Furuta Pendulum
12.50-13.10	043	<i>De Simone, Veneziano, Guida</i>	Analysis and Modeling of a Mechanical Power Recirculating Test Bench for Gears Testing

13.15-14.00	Buffet Lunch
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14.00-14.30	IFTToMM Tribology Technical Committee blended meeting
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The Lloyd's Baia Hotel

SESSION 6			Room F
Contact Mechanics			
Chairperson:			
TIME	PAPER ID	AUTHORS	TITLE
14.40-15.00	021	<i>Ruffini, Stefanelli, Napolitano Dell'Annunziata, Romagnuolo, Barbaro</i>	A Superellipse-Based Model for Tire Contact Patches Reproduction
15.00-15.20	031	<i>Ceglie, Menga, Carbone</i>	The interplay of viscoelasticity and friction in thin tape peeling
15.20-15.40	037	<i>Santeramo, Putignano, Kren, Vorlaufer, Carbone</i>	Viscoelastic Circular Contact Mechanics: A Boundary Element formulation
15.40 -16.00	038	<i>Mandriota, Carbone, Menga</i>	Modelling viscoelastic adhesion and friction in sliding contact mechanics
16.00-16.20	052	<i>Ahmed, Biancofiore</i>	Modelling cavitation in viscoelastic thin lubricating films

SESSION 7			Room D
Materials and Coatings			
Chairperson:			
TIME	PAPER ID	AUTHORS	TITLE
14.40-15.00	027	<i>Michalczewski, Kalbarczyk, Łuszcz, Pieniak, Skolek, Nędza, Wieczorek</i>	Surface fatigue of DLC-coated spur gears
15.00-15.20	028	<i>Zhang, Yasuda, Umehara, Tokoroyama</i>	Effect of hydrogen doping for ta-C on friction of ta-C:H sliding against bearing steel in high temperature and high vacuum
15.20-15.40	035	<i>Suzuki, Tokoroyama, Takita, Zhang, Umehara, Sato, Nishida</i>	Enhancing Cutting Tool Performance through ta-C:Ta Coating for CFRP Dry Machining: Investigation of Wear Resistance and Cutting Forces
15.40 -16.00	Only Abstract (048)	<i>Beau, Kind, Reh</i>	New findings regarding high-temperature materials
16.00-16.20	Only Abstract (054)	<i>Khan</i>	Exploring the machinability of CrMnFeCoNi high entropy alloy and the effect of metal cutting fluids

16.20-16.35	Coffee break
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The Lloyd's Baia Hotel

SESSION 8			Room F
Design and optimization of mechanical systems			
Chairperson:			
TIME	PAPER ID	AUTHORS	TITLE
16.40-17.00	003	<i>Achilli, Burini, Logozzo, Valigi</i>	Contact force recognition in robotic fingertips' interface
17.00-17.20	006	<i>Natali, Stuppioni, Battarra, Blum, Dalpiaz, Mucchi</i>	Advantages and limitations of oil film thickness capacitive sensor measurements in balanced vane pumps
17.20-17.40	010	<i>Trivella, Colombo, Lentini, Raparelli</i>	Dynamic and stability analysis of an air pad controlled by a differential diaphragm valve
17.40 -18.00	019	<i>Romagnuolo, Avolio, Maglione, Stefanelli, Napolitano Dell'Annunziata</i>	Experimental investigation on tire-road interaction made with the British pendulum evo as thermal conditions of the tire and road surface
18.00-18.20	036	<i>Keller, Fidlin</i>	Thermo-mechanical Investigation of a Rotational Friction Joint Under High-frequency Excitation

SESSION 9			Room D
Friction, corrosion and wear			
Chairperson:			
TIME	PAPER ID	AUTHORS	TITLE
16.40-17.00	020	<i>Biasoli de Mello, Narvaez Ardila, Costa</i>	Influence of the Counter-Body Material on Micro-Abrasion-Corrosion
17.00-17.20	051	<i>Cioaza, Birleanu, Pustan, Contiu, Bere</i>	Evaluation the tribological properties of different Fiber Reinforced Polymers



The Lloyd's Baia Hotel

SESSION 10

Green Tribology

Chairperson:

Room D

TIME	PAPER ID	AUTHORS	TITLE
17.20-17.40	026	<i>Matijošius, Žunda, Staišiūnas, Selskienė, Padgurskas</i>	Antifrictional effect of biobased fillers on bioceramic alumina
17.40 -18.00	Only Abstract (055)	<i>De Barros, Long, Martin, Loehle</i>	Graphene formation from medicinal hypericin by mechanochemistry A new concept for environmentally-acceptable lubrication
18.00-18.20	039	<i>Padgurskas, Rukuiža, Volskis, Karalis, Senatore</i>	Tribological investigations of waste cooking palm oil using them for production of lubricants

19.30	Gala Dinner at Lloyd's Baia Hotel
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Wednesday, May 8th, 2024

Jointly with

9th Workshop of the Italian
Association of Tribology
"Tribology and Industry"



Fondazione UNISA - Campus in Fisciano of the Univ. of Salerno

8.30	Bus from The Lloyd's Baia Hotel to UNISA	University of Salerno Campus
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9.15-9.45	Welcome to UNISA Campus	University of Salerno Campus
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SESSION 11 GAIT (AIMETA Group of Tribology) Chairperson:			Room 1
TIME	PAPER ID	AUTHORS	TITLE
9.50-10.10	045	<i>Betti, Forte, San Andrés, Delgado, Ciulli</i>	Comparison between Numerical and Experimental Static Performance and Sensitivity Study on a Tilting Pad Journal Bearing in a Load On Pad Configuration
10.10-10.30	015	<i>Lentini, Colombo, Ghidini</i>	On the Dynamic Characterization of Elastomeric O-Rings
10.30-10.50	022	<i>Achilli, Angelella, Dionigi, Logozzo, Valigi</i>	Preliminary development of a fluidic device for astrobiology missions
10.50 -11.10	029	<i>Jamali, Tolephih, Jweeg, Aljibori, Mohammed, Abdullah, Alfiras, Ruggiero</i>	Analysis of the Dynamic Response of Variable Bearing Design under Impact Load Using Taguchi Method
11.10-11.30	025	<i>Jamali, Senatore, Jweeg, Aljibori, Mohammed, Abdullah, Alfiras</i>	Effect of Bearing Edges Chamfering on the Characteristics of A Wide Range of Journal Bearing Ratio Under 3D Misalignment

11.30-11.45	Coffee break
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SESSION 12

Bio-Green Tribology

Chairperson:

Room 1

TIME	PAPER ID	AUTHORS	TITLE
11.50-12.10	032	<i>De Stefano, Lanza, Sicilia, Ruggiero</i>	Experimental analysis of different dental implants surfaces by using optical methods
12.10-12.30	033	<i>De Stefano, Sicilia, Ruggiero</i>	Tribocorrosive analysis of Titanium Grade V in different biological solutions
12.30-12.50	034	<i>De Stefano, Sicilia, Valasek, D'Amato, Ruggiero</i>	Tribological behaviour of PLA composites with different natural fibers and degradation mechanisms
12.50-13.10	046	<i>Sicilia, De Stefano, Ruggiero</i>	From marker trajectories to muscular activations: a musculoskeletal multibody model considering compliant tendon behaviour
13.10-13.30	047	<i>D'Amato, Nieto-Marquez, Ballesteros, Sicilia, De Stefano, Ruggiero</i>	On the Tribological Performance of Vegetable Lubricants: Experimental Investigation on Rice Bran Oil with Propyl Gallate

13.45-14.45

Lunch at UNISA joined with 9th AIT Workshop

15.00-16.00

Closing Ceremony

17.00

Bus from UNISA to The Lloyd's Baia Hotel

