



**DRaF 2018**

**International Symposium on  
Dynamic Response and Failure  
of Composite Materials**

**Island of Ischia, Italy  
June 12-15, 2018  
Draf 2018**

## **Chair Person**

Valentina Lopresto

Antonio Langella

Department of Chemical, Materials and Production Engineering  
University of Naples “Federico II”

## **Organizing Committee**

Valentina Lopresto

Antonio Langella

Yapa D.S. Rajapakse (ONR)

Claudio Cigliano

Department of Chemical, Materials and Production Engineering  
University of Naples “Federico II”

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Francesco Marulo (Univ. of Naples)

# International Symposium on Dynamic Response and Failure of Composite Materials

## DRaF 2018

### PROGRAM

Tuesday, June 12th, Afternoon		
5.00	6.00	<b>Registration</b>
6.00	6.50	<p><b>Pre-Conference Event</b></p> <p>Chair: <b>P. Maffettone</b>, Director of Dpt. of Chemical, Materials and Production Engineering CIRA, <b>S. Cantoni</b>, Deputy Manager of Space Division MBDA, <b>G. Sabino</b>, Director of Research &amp; Technologies Group MSC, <b>J.-C. Mourier</b>, Business Development, MSC Software – Aerospace EMEA Italian Navy, <b>F. Greco</b>, Capitano di Fregata</p>
6.50	7.30	<p><b>Special Contribution</b></p> <p><b>Wave Theory of Impact and Professor Yury Rossikhin contribution in the field</b>  <b>M. V. Shitikova</b>, Voronezh State Technical University, Russian Federation</p>
7.30	9.00	<b>Welcome Cocktail</b>

Wednesday, June 13th, Morning		
Room "Phitecusa"		
8.30	8.45	<b>Welcome by Symposium Chairperson</b>
8.45	9.30	<p><b>Opening Session - Plenary Lecture</b></p> <p><b>Challenges in the Dynamic Response of Composites for Marine Structures: Recent Advances and Future Directions</b></p> <p><b>Dr. Yapa D. S. Rajapakse</b>            Program Manager, ONR Solid Mechanics</p> 
9.30	10.15	<p><b>Plenary Lecture</b></p> <p><b>Implosion of Advanced Composite Structures Within Complex Underwater Environments</b> Arun Shukla, University of Rhode Island</p>
10.15	10.35	<b>Coffee Break</b>
10.35	1.00	<p><b>ONR Special Session</b>            Chairs V. Lopresto, M. Porfiri</p>
10.35	11.05	<p><b>Key Note: Slamming on the Water Surface in The Presence of a Solid Obstacle: Some Insight into the Effect of Ice on Hull Slamming</b> M. Porfiri, New York University</p>
11.05	11.30	<p><b>Performance of composite materials under high speed impact in extreme environments</b>  <b>V. Sanchez Galvez</b>, D. Cendón, R. Sancho, F. Gálvez</p>
11.30	11.55	<p><b>Lightweight expandable deployable structures for italian navy applications</b>  <b>F. Greco</b>, S. Mancini, S. Laurenzi, D. Rufo</p>

11.55	12.20	<b>Bioinspired composites with improved dynamic behavior in slamming loads</b> <u>J. C. Suárez-Bermejo</u> , E. Sanz-Horcajo, M. A. López-Manchado	
12.20	12.40	<b>Low velocity impact tests on Carbon/Glass hybrid composite laminates in vinylester resin</b> <u>I. Papa</u> , V. Lopresto	
12.40	1.00	<b>Influence of the thick water layer on the front side of CFRP vinylester laminates in low velocity impact conditions</b> <u>V. Lopresto</u> , I. Papa, A. Langella	
1.00	1.55	<b>Lunch</b>	
<b>Wednesday, June 13th, Afternoon</b>			
<b>Room “Phitecusa”</b>			
1.55	3.45	<b>ONR Special Session</b> Chair <b>M. Porfiri</b>	
1.55	2.25	<b>Key Note: Hybrid Composite Sandwich Panels Under Impact And Air Blast Loading</b> <b>J.P. Dear</b> , Imperial College London	
2.25	2.50	<b>The impact behaviour of auxetic cellular cores: benchmark against the hexagonal honeycomb case</b> <u>Z. Kazancı</u> , A. Atalp, O. F. Ertaş, F. Usta, H. S. Türkmen, F. Scarpa, I. Doltsinis	
2.50	3.15	<b>Impact and flexural performance of composite sandwich structures in low temperature arctic conditions</b> <u>K.T. Tan</u> , M.H. Khan	
3.15	3.30	<b>Coffee Break</b>	
3.30	6.25	<b>Session 1: Room “Phitecusa”</b> Automotive Chairs: <b>G. Belingardi, S. Boria</b>	<b>Session 2: Room “Primavera”</b> Dynamic Behaviour of Green Composites Chairs <b>F. Touchard, J. Tirillò</b>
3.30	3.55	<b>Sensitivity analysis of material model parameters to reproduce crushing of composite tubes</b> <u>S. Boria</u> , G. Belingardi	<b>Low velocity impact and Compression After Impact (CAI) behavior of natural fibers based sandwich composite panels</b> A. Riccio, V. Iodice, G. Zampini, L. Macera, R. Sansone, <u>A. Sellitto</u> , A. Caraviello
3.55	4.20	<b>Interaction of guided waves with delamination in a bi-layered aluminum-composite pressure vessel</b> <u>M. Parodi</u> , C. Fiaschi, V. Memmolo, F. Ricci	<b>Comparison of glass and natural fibers sandwich panel impact behavior: influence of presence of recycled rubber granulates in the honeycomb</b> <u>A. Rogeon</u> , D. Hardy, F. Lachaud
4.20	4.45	<b>Complete material characterization of thermoplastic composite laminate at forming state</b> <u>N. Amirth Jayasree</u> , Politecnico di Torino	<b>A comparative study of the impact behaviour of cork-based sandwich structures with different skins</b> F. Sarasini, J. Tirillò, L. Lampani, C. Sergi, P. Russo, F. Cimino, G. Simeoli, P.J. Liotier
4.45	5.10	<b>Prediction of composite failure for vehicle crash and space applications</b> <u>G. Turinetti</u> , A. G. Airale, A. Ferraris, A. Messana, L. Sisca, M.Monti, A. Romeo, M. Carello	<b>Low-velocity impact of flax fiber reinforced polymer composites</b> <u>T. Q. Truong Hoang</u> , Y. Lebaupin, M. Chauvin, F. Touchard
5.10	5.35	<b>Thermosetting and thermoplastic impact attenuator under axial loading</b> S.Boria, <u>A.Scattina</u> , G.Belingardi	<b>Multiscale interface testing in eco-composites by means of laser shock</b> <u>F. Touchard</u> , A. Perrier, L. Chocinski-Arnault, M. Boustie

5.35	6.00	<b>Multi-Scale method to determine cohesive zone model parameters of metal/composite hybrid joints for automotive applications</b> M. Basso, R. Vinciguerra	<b>Evaluation of a new green composite solution for wind turbine Blades</b> S. Boria, C. Santulli, <u>E. Raponi</u> , F. Sarasini, J. Tirillò
6.00	6.25	<b>Damaged Composite Materials: Fe Simulation Based on Local Residual Properties Distribution</b> A. Tridello, D.S. Paolino, V. Ferrero, R. Ciardiello, G. Belingardi	<b>Impact damage behavior of basalt fibers composite laminates: comparison between vinyl ester and nylon 6 based systems</b> <u>P. Russo</u> , I. Papa, V. Lopresto
7.30	<b>Nice Dinner - Departure from Hotel Continental</b>		

### Thursday, June 14th, Morning

**Aerospace Session: Room "Phitecusa"**  
**New concepts in aerospace structural design**  
**Chair: F. Ricci**

8.30	9.15	<b>Plenary Lecture</b> <b>Future Challenges in the Space Domain</b> W. Villadei, Cosmonaut, Italian Air Force	
9.15	10.00	<b>Plenary Lecture: Damage Tolerance of an Impacted Composite Laminate</b> C. Bouvet - Toulouse University, Institut Clément Ader, ISAE-Supaéro	
10.00	10.25	<b>On the potential use and challenges of an integrated SHM system for composite materials</b> Amir Nasrollahi, <u>P. Rizzo</u>	
10.25	10.50	<b>Shape Memory Polymer Composites in the Space Environment</b> <u>L. Santo</u>	
10.50	11.10	<b>Coffee Break</b>	
11.10	11.35	<b>Acoustic Source Localization – recent advances and challenges</b> <u>T. Kundu</u>	
11.35	12.00	<b>Hybrid guided wave based SHM system for composite structures</b> N. D. Boffa, <u>E. Monaco</u> , F. Ricci	
12.00	12.25	<b>Head injury assessment for aircraft seat certification</b> <u>M. Guida</u> , G. Lamanna, F. Marulo, F. Caputo, B. Vitolo	
12.25	12.50	<b>Numerical techniques for the simulation of the lamb propagation in a blended gfrp winglet</b> <u>A. De Luca</u> , G. Petrone, A. De Fenza, D. Perfetto	
12.50	1.15	<b>Parametric analysis of integrated fuselage composite seat for small aircraft</b> <u>P. Russo</u> , M. Guida, R. Serpieri, F. Marulo, B. Vitolo	
1.15	2.15	<b>Lunch</b>	

### Thursday, June 14th Afternoon

**Aerospace Session: Room "Phitecusa"**  
**New concepts in aerospace structural design**  
**Chair: F. Marulo**

2.15	2.40	<b>Low-velocity impact response of r-glass/epoxy composites produced by vacuum infusion</b> L.E. Caldeira, A. Manes, S.C. Amico, M. Giglio	
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2.40	3.05	<b>A Numerical Study on the Bird Strike of a Crashworthy composite wing by a Coupled Eulerian-Lagrangian (CEL) approach</b> S. Saputo, A. Sellitto, A. Riccio	
3.05	3.30	<b>Evaluation of impacted basalt-based composites with lock-in thermography and ultrasonic phased array</b> S. Boccardi, N.D. Boffa, G.M. Carlomagno, G. Del Core, C. Meola, F. Ricci, P. Russo, G. Simeoli	
3.30	3.55	<b>A multi-channel system for on-line structural health monitoring using guided waves</b> V. Memmolo, L. Maio, E. Monaco, N. Cimminiello, G. Iannaccone, B. Di Gianpaolo	
3.55	4.15	<b>Coffee Break</b>	
4.15	6.45	<b>Aerospace Session 3: Room “Phitecusa” New concepts in aerospace structural design Chair: TBD</b>	<b>Session 4: Room “Primavera” Ceramic Matrix Composites (CMC) Chair: M. Ferraris</b>
4.15	4.40	<b>Crashworthy design of an aircraft wing leading edge to withstand bird impact events</b> F. Di Caprio, D. Cristillo, S. Saputo, M. Guida, A. Riccio	<b>Processing and characterization of advanced joined components</b> M. Ferraris
4.40	5.05	<b>Investigation of PZT response in composite structures with variable degradation levels: experimental and numerical investigation</b> V. Memmolo, H. Elahi, M. Eugeni, E. Monaco, F. Ricci, M. Pasquali, P. Gaudenzi	<b>A numerical study on a ceramic matrix composite wing leading edge</b> M. Ferraiuolo, E. Bottone, M. Rennella, R. Scigliano, A. Riccio
5.05	5.30	<b>Strain rate dependent shear response of textile composites</b> F. Martínez-Hergueta, J. Wiegans, N. Petrinic, C. González	<b>Finite elements assisted Ndt-Analysis of Oxide-Ceramic matrix composites by Impulse Excitation Technique (IET)</b> N. Wolff, N. Langhof, W. Krenke
5.30	5.55	<b>Dynamic performance of a nano-modified composite aeronautical panel</b> M. Viscardi, M. Arena, G. Barra, L. Vertuccio, L. Guadagno	<b>Shaping Cmc for Ramjet Supersonic Profiles</b> P. Di Petta,
5.55	6.20	<b>Pull-off test analysis and numerical correlation of an innovative landing gear bay composite component</b> M. Viscardi, M. Arena, P. Napolitano, P. Cerreta, P. Iaccarino	<b>Novel hybrid materials with added-value functionalities for applications in extreme environments</b> F. Monteverde, D. Sciti, L. Zoli, F. Saraga
6.20	6.45	<b>Compressive behaviour of a damaged omega stiffened panel: damage detection and numerical analysis</b> A. Riccio, A. Russo, A. Raimondo, M. Zarrelli, C. Toscano	<b>TBD</b> MBDA

## Friday, June 15th, Morning

### Room “Phitecusa”

8.30	9.15	<b>Plenary Lecture</b> <b>Fatigue Life of Composite Materials under Spectrum Loading</b> A. D'Amore, University of Campania "L. Vanvitelli"	
9.15	10.55	<b>Session 5: Room “Phitecusa” MSC Session: Simulating reality – from Material to System Chair: M. Calcagni</b>	<b>Session 6: Room “Primavera” Modelling Chair: A. Riccio</b>

9.15	9.40	<b>Predictive multiscale simulation framework for advanced composite materials</b> <u>M. Giugno</u>	<b>Analytical model of high-velocity impact of a deformable projectile against textile-based Composites</b> <u>R. Scazzosi</u> , A. Manes, M. Giglio
9.40	10.05	<b>Compression After Impact analysis of composite laminates</b> <u>L. Pellone</u> , F. Di Caprio, F. Romano, U. Mercurio, G. Tartaglia	<b>Semi-continuous strategy for the modelling of damage mechanisms in hybrid ud/woven composites under impact loading</b> B. Mahmoud, L. Manseri, <u>P. Navarro</u> , S. Marguet, I. Tawk, J-F Ferrero
10.05	10.30	<b>Development of Virtual Allowables on RTM processes</b> <u>L. Luponio</u>	<b>Numerical modeling of low-velocity impact of multilayered structures using the nonlocal peridynamics</b> R. Bai, <u>H. Naceur</u> , D. Coutellier, A. Laksimi, Z. Aboura
10.30	10.45	<b>Coffee Break</b>	
10.45	12.50	<b>Session 5: Room “Phitecusa” MSC Session: Simulating reality – from Material to System Chair: M. Calcagni</b>	<b>Session 6: Room “Primavera” Modelling Chair: P. Navarro</b>
10.45	11.10	<b>Virtual solutions for advanced components of VEGA C launcher</b> <u>G. Fabbi</u> , D. D’Orazio	<b>A sensitivity analysis on fibre bridging effects in delaminated composite panels under Flexural Loading Conditions</b> <u>A. Russo</u> , A. Sellitto, A. Riccio
11.10	11.35	<b>Multiscale approach on aero-composite simulation</b> Leonardo	<b>Finite element analysis for inelastic materials with linear and nonlinear kinematic hardening rules</b> <u>F. De Angelis</u>
11.35	12.00	<b>New design paradigms and approaches for aircraft composite structures</b> <u>F. Romano</u> , L. Pellone, U. Mercurio, L. Notarnicola	<b>Experimental and numerical study of the influence of a tensile preload on woven composite laminates under impact loading</b> <u>T. Langella</u> , A. Rogani, P. Navarro, J.F. Ferrero, V. Lopresto, A. Langella
12.00	12.25	<b>Session 7: Room “Phitecusa” Metal Matrix Composites Chair: L. Boccarusso</b>	<b>Experimental-numerical characterization of a composite fairing for new generation railway applications</b> <u>M. Viscardi</u> , M. Arena, M. Guida, M. Bertino
		<b>Manufacturing of a metal matrix composite coating on a polymer matrix composite through cold gas dynamic spray technique: process development and tribological testing</b> L. Boccarusso, A. Viscusi, A. S. Perna, D. de Fazio, R. Sansone, M. Durante, L. Carrino, <u>A. Astarita</u>	
12.25	12.50	<b>Numerical and experimental impact analysis of stepped and concentric crash tubes</b> <u>F. Usta</u> , Z. Eren, H. S. Türkmen, Z. Kazancı, Z. Mecitoglu	<b>Quasi-static finite element analysis of different type of auxetic lattices</b> <u>K. Gunaydin</u> , Z. Eren, H. S. Turkmen
12.50	1.50	<b>Lunch</b>	

## Friday, June 15th, Afternoon

1.50	3.05	<b>Session 5: Room “Phitecusa” Damage Investigation Chair: T. Langella</b>	<b>Session 6: Room “Primavera” Structural Impact Research Group, Istanbul Chair: A. Manes</b>
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1.50	2.15	<b>Experimental and numerical study of composite omega stringer - skin debonding under flexural loading conditions</b> F. Di Caprio, A. Sellitto, A. Riccio, <u>V. Acanfora</u>	<b>Impact behaviour of triggered and non-triggered crash tubes with auxetic materials</b> <u>F. Usta</u> , O. F. Ertaş, A. Ataalp, H. S. Türkmen, Z. Kazancı, F. Scarpa
2.15	2.40	<b>Evaluation via espi of damages on gfrp laminates impacted at room and lower temperatures</b> <u>V. Pagliarulo</u> , I. Papa, V. Lopresto, A. Langella, P. Ferraro	<b>Dynamic finite element analysis of auxetic lattices filled tubes</b> <u>K. Gunaydin</u> , Z. Eren, H. S. Turkmen
2.40	3.05	<b>Effect of the hybridization on the impact properties of flax/basalt epoxy composites</b> M.R. Ricciardi, I. Papa, V. Antonucci, V. Lopresto, A. Langella	<b>Crushing characterization of sisal fiber composites for computational modelling</b> <u>Z. Eren</u> , K. Günaydın, Z. Kazancı, Z. Mecitoğlu
3.05	3.20	<b>Light Coffee Break</b>	
3.20	4.35	<b>Session 5: Room “Phitecusa” Damage Investigation Chair: V Pagliarulo</b>	<b>Session 7: Room “Primavera” Structural Impact Research Group, Istanbul Chair: P. Russo</b>
3.20	3.45	<b>A variational formulation analysis in viscoplasticity problems</b> <u>F. De Angelis</u>	<b>Impact behaviour of nested composite crash tubes</b> <u>F. Usta</u> , H. S. Turkmen
3.45	4.10	<b>Resin injection repair of damage impact in glass fiber composites</b> M.R. Ricciardi, I Papa, A.Martone, V.Antonucci, <u>M.Giordano</u> , A. Langella	<b>The effect of adhesives to the sandwich structure impact behaviour</b> <u>K. Gunaydin</u> , M. Demir Aydın, H. Suleyman Turkmen
4.10	4.35		<b>Numerical investigation of toroidal sandwich panels with auxetic core under dynamic loads</b> <u>F. Usta</u> , H. S. Turkmen, F. Scarpa
<b>4.35 pm</b>	<b>Closure of the Symposium</b>		
<b>6.30 pm</b>	<b>WINE TOUR: departure from Hotel Continental</b>		

## IMPORTANT NOTES:

All registered participants at Draf2018 must wear their name badge when attending luncheons, coffee breaks, Conference Dinner or any official Draf2018 function.

All the speakers are asked to upload their presentations on the computer in the room, at least 15 minutes before the start of their session.

20 minutes are dedicated to the presentation. The last five minutes will be dedicated to questions and discussion. We warmly ask to be on time.

## CONFERENCE SECRETARIAT

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