

# IGF Video recordings

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The second IJF & FFEMS  
“Challenges in Multiaxial Fatigue”



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April 12-14, 2017 – Bonifacio, France

# SF2M

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GRUPPO  
ITALIANO  
FRATTURA (IGF)

present

## The 2nd IJF & FFEMS CHALLENGES IN MULTIAXIAL FATIGUE WORKSHOP

Bonifacio, France  
12-14 April 2017

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### ► BACKGROUND

In situations of practical interest, mechanical components are subjected to complex systems of cyclic forces resulting in local multiaxial stress/strain states. Due to the scientific/industrial relevance of such an engineering problem, since the pioneering work done by Gough, a tremendous effort has been made by the international scientific community both to understand the cracking behaviour of materials damaged by bi/tridimensional cyclic stress/strain states and to devise safe engineering procedures suitable for designing mechanical components against multiaxial fatigue. Thanks to such extensive and systematic investigations, nowadays, when assessing real components, engineers can take full advantage of many well-established methods as well as of many experimental findings.

In this complex scenario, the organisers of the present workshop believe that it would be useful for those researchers systematically working on multiaxial fatigue to gather together and to revise those ideas and concepts which have been proposed and validated so far. This is aimed to be done by collegially investigating state-of-the-art solutions, trying to answer the most critical open questions about this complex problem.

The organisers of this unique workshop are confident that the fatigue and fracture community would benefit from an opportunity for invited researchers to present and exchange new data and cutting edge ideas related to multiaxial fatigue in an informal, interactive format at a venue on a stunning french mediteranean island.

## VIDEO-PRESENTATIONS

Presentation title	Authors	DOI
Simple criterion for predicting fatigue life under combined bending and torsion loading	K. Slamecka, J. Pokluda	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.1">https://doi.org/10.53255/IGFTUBE.WS2017_B.1</a>
A novel approach to model fretting fatigue in multiaxial and non proportional loading conditions	G. Rosseau, C. Montebello, D. Neron, Y. Guilhem, S. Pommier	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.2">https://doi.org/10.53255/IGFTUBE.WS2017_B.2</a>
A two step multiaxial racetrack filter algorithm for non proportional load histories	M. A. Meggiolaro, J.T.P. de Castro, H. Wu	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.3">https://doi.org/10.53255/IGFTUBE.WS2017_B.3</a>
Crack initiation life in notched ti 6al 4v titanium bars under uniaxial and multiaxial fatigue synthesis based on the averaged strain energy density approach	G. Meneghetti, A. Campagnolo, F. Berto, K. Tanaka	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.4">https://doi.org/10.53255/IGFTUBE.WS2017_B.4</a>
Cracking directions in multiaxial low cycle fatigue at high and room temperatures	M. Sakane, T. Itoh	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.5">https://doi.org/10.53255/IGFTUBE.WS2017_B.5</a>
Determination of the critical plane orientation depending on the fatigue curves for bending and torsion	M. Kurek, T. Lagoda	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.6">https://doi.org/10.53255/IGFTUBE.WS2017_B.6</a>
Effect of different environmental conditions on surface crack growth in aluminum alloys	V. Shlyannikov, R. Yarullin, I. Ishtyryakov	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.7">https://doi.org/10.53255/IGFTUBE.WS2017_B.7</a>
Effect of local microstructure on the fatigue damage development in short fiber reinforced thermoplastic	H. Rolland, N. Sainter, I. Raphael, C. Mareau, G. Robert	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.8">https://doi.org/10.53255/IGFTUBE.WS2017_B.8</a>
Effect of spectral cross correlation on multiaxial fatigue damage simulations using the critical plane approach	A. Carpinteri, A. Spagnoli, S. Vantadori	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.9">https://doi.org/10.53255/IGFTUBE.WS2017_B.9</a>
Evaluation and visualization of multiaxial fatigue behavior under random non proportional loading condition	T. Morishita, F. Ogawa, T. Itoh	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.10">https://doi.org/10.53255/IGFTUBE.WS2017_B.10</a>

Presentation title	Authors	DOI
Evaluation of new multiaxial damage parameters on low carbon steel	A.S. Cruces, P. Lopez-Crespo, B. Moreno, A. Lopez-Moreno, S. Suman	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.11">https://doi.org/10.53255/IGFTUBE.WS2017_B.11</a>
Evaluation of the lemaitre damage model using axial torsion fatigue tests of extruded az31b magnesium alloy	F. Castro, Y. Jiang	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.12">https://doi.org/10.53255/IGFTUBE.WS2017_B.12</a>
Exploring multiaxial high cycle fatigue strength of metals using a crystal plasticity modelling	C. Mareau, F. Morel, C. Robert	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.13">https://doi.org/10.53255/IGFTUBE.WS2017_B.13</a>
Fatigue crack nucleation under microstructurally multiaxial stress states in a ni superalloy using CP, HR-EBSD, HR-DIC	T. Zhang, B. Chen, J. Jiang, B. Britton, F. Dunne	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.14">https://doi.org/10.53255/IGFTUBE.WS2017_B.14</a>
Gradient approach for the evaluation of the fatigue limit of welded structures under complex loading	Y. Nadot, D. Halm, F. Dal Cero Coelho	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.15">https://doi.org/10.53255/IGFTUBE.WS2017_B.15</a>
Multiaxial fatigue property of type 316 stainless steel using hollow cylinder specimen under combined pull loading and inner pressure	T. Morishita, Y. Takda, T. Itoh	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.16">https://doi.org/10.53255/IGFTUBE.WS2017_B.16</a>
Notched multiaxial fatigue of al7050 t7451 on the need for an equivalent process zone size	M.V.C. Sa, J.L.A. Ferreira, C.R.M. da Silva, I.A. Araujo	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.17">https://doi.org/10.53255/IGFTUBE.WS2017_B.17</a>
On the applicability of miner's rule for multiaxial fatigue life calculations under non proportional load histories	M. A. Meggiolaro, J.T.P. de Castro, S.E. Ferreira, H. Wu	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.18">https://doi.org/10.53255/IGFTUBE.WS2017_B.18</a>
Prediction of fatigue crack initiation under biaxial loading	JV Sahadi, D Nowell, RJH Paynter	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.19">https://doi.org/10.53255/IGFTUBE.WS2017_B.19</a>
Sharp three dimensional notches under combined nominal normal and shear fatigue loading	M. Vormwald, E. Shams	<a href="https://doi.org/10.53255/IGFTUBE.WS2017_B.20">https://doi.org/10.53255/IGFTUBE.WS2017_B.20</a>



