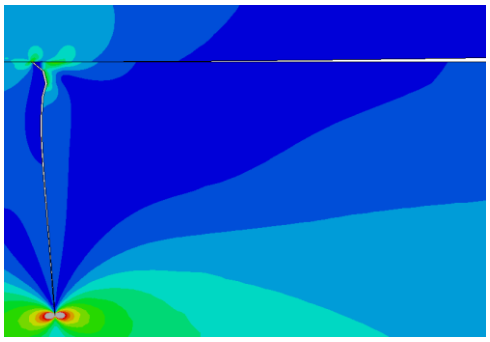
FFW 2020



Conference Programme

Venue: Online via MS Teams

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200 JAAR UNIVERSITEIT GENT

The 8th International Conference on Fracture Fatigue and Wear (FFW 2020) August 26-27, 2020, Online conference

Chairman

Prof. Magd Abdel Wahab
Ghent University, Belgium

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Prof. C Zhou, Nanjing University of Aeronautics and Astronautics, China
Dr. X Zhuang, Leibniz Unversität Hannover, Germany

KEYNOTE LECTURE

Wednesday 26 August 2020

Time: 10:15 am to 11:00 am
Keynote speaker: Professor David Nowell
Affiliation: Mechanical Engineering, Imperial College London
Title: Are interfaces a good thing? Fretting fatigue, wear, and frictional damping

Abstract:

Engineering systems usually consist of many individual components with mechanical connections between them. These connections frequently take the form of frictional interfaces. Examples include blade roots, splines, flanges and other bolted connections. Any system will have a number of natural frequencies and if mechanical forcing occurs at a similar frequency, significant vibration amplitudes will result. Hence there is frequently a requirement to provide system damping. Frictional interfaces provide a convenient form of damping, either fortuitously or introduced deliberately into the design.

The considerations above suggest that interfaces in a system are a good thing, even if their contribution to system behaviour is not always predictable and/or repeatable. On the other hand, there are many examples of premature failure from interfaces by the processes of fretting fatigue or fretting wear. Significant research effort has been deployed over many years to address these failure modes. Often the objective is to reduce or eliminate the effect of fretting. Whilst this is an entirely laudable aim, it can often fail to recognise that the joint behaviour has a significant effect on overall system dynamics.

Hence what is needed in real engineering design is a holistic approach, which considers the driving force, the system response and the role of the interface, recognising that eliminating fretting is not always the optimum solution. The keynote will address this issue and outline a framework for the design of more effective joints between components.

Biographical Sketch:

Professor David Nowell is Professor of Machine Dynamics at Imperial College London. He has been involved in research in solid mechanics and tribology for over 30 years and he has developed a particular interest in fretting fatigue. His recent research has focused on the role of frictional interfaces in providing damping in complex engineering systems. Professor Nowell is a Fellow and a Trustee of the Institution of Mechanical Engineers (I.Mech.E.). He is also a Fellow of the Institute of Materials Minerals and Mining (IoM3). He is editor of the Journal of Strain Analysis for Engineering Design.

CONFERENCE PROGRAM SUMMARY

Wednesday 26 August 2020

Time	Session
10:15 am to 11:00 am	Keynote lecture
11:10 am to 1:20 pm	Fatigue 1
1:20 pm to 2:00 pm	Break
2:00 pm to 4:00 pm	Fracture 1
4:00 pm to 4:10 pm	Break
4:10 pm to 6:50 pm	Fatigue 2

Thursday 27 August 2020

Time	Session
8:30 pm to 11:10 pm	Fatigue 3
11:10 pm to 11:20 pm	Break
11:20 am to 1:20 pm	Wear 1
1:20 pm to 2:00 pm	Break
2:00 pm to 2:30 pm	Posters
2:30 pm to 4:10 pm	Wear 2
4:10 pm to 4:20 pm	Break
4:20 pm to 6:20 pm	Fracture 2

Wednesday 26 August 2020	
10:00 am to 10:15 am	**Opening address**: **Prof. Magd Abdel Wahab**, Ghent University, Belgium
10:15 am to 11:00 am	**Keynote lecture**: Are interfaces a good thing? Fretting fatigue, wear, and frictional damping, **Professor David Nowell**, Mechanical Engineering, Imperial College London
	Session Fatigue 1
11:00 pm to 11:20 pm	FFW1116: The effect of friction on micropitting, **Mao Ueda**, Hugh Spikes and Amir Kadiric
11:20 am to 11:40 am	FFW1118: Three-dimensional numerical analysis of shrink-fitted shafts under rotating bending fretting fatigue condition, **Jingchen Wang** and Yukui Gao
11:40 am to 12:00 am	FFW1161: Effect of Specimen Size on Localization using Digital Image Correlation, **Rupesh K. Verma**, Giang D. Nguyen, Ha H. Bui and Murat Karakus
12:00 pm to 12:20 pm	FFW1012: An Experimental Investigation into the Fatigue Behavior of Spot Welded Tensile Shear (TS) Specimens, **Ahmet H. Ertas** and Mustafa Akbulut
12:20 pm to 12:40 pm	FFW1114: Estimation of Steam Turbine Shafts Fatigue Damage Caused by Torsional Vibrations, O. Chernousenko, **V. Peshko**, B. Marisyuk, A. Bovsunovsky
12:40 pm to 1:00 pm	FFW1045: Effect of contact pressure and load ratio on fretting fatigue behavior of Ni based superalloy-718, **Ramit Kaushik**, S. Ganesh Sundara Raman, Murthy Haradanahalli, D. Chandru Fernando and Anuradha Nayak Majila
1:00 pm to 1:20 pm	FFW1035: Evaluation of Fatigue Strength Characteristics of Al-Mg Oxide Dispersed Aluminum Composite, **Yuki Ueno**, Koichiro Nambu, and Masahiro Okumiya
1:20 pm to 2:00 pm	**Break**
	Session Fracture 1
2:00 pm to 2:20 pm	FFW1107: Sensitivity of Damping for Diagnostics of Damage in Structure, **A. Bovsunovsky**, E. Soroka
2:20 pm to 2:40 pm	FFW1096: Flow Forming Process for Annealed AISI 5140 Alloy Steel Tubes, Aptullah Karakaş, **Acar Can Kocabçak**, Senai Yalçınkaya, Yusuf Şahin
2:40 pm to 3:00 pm	FFW1158: Influence of Microcracks on Strength of Diamond Wire Sawn Silicon Substrates, **Florian Wallburg**, Kevin Meyer, Michael Budnitzki, Meinhard Kuna, Felix Kaule, and Stephan Schoenfelder
3:00 pm to 3:20 pm	FFW1058: Impact of abrasive blasting media on the strength of steel sheets adhesively bonded joints, Anna Rudawska, **Jakub Szabelski**, Magd Abdel Wahab, Izabela Miturska
3:20 pm to 3:40 pm	FFW1020: Crowd Management for Power Generation: A critical analysis on the existing materials and methods. (Structural modal analysis), **Abdulaziz O Alnuman**, Muhammad A Khan and Andrew Starr
3:40 pm to 4:00 pm	FFW1031: Fatigue of multiaxially loaded shaft-hub connection under different load parameters, **Lukáš Suchý** and Alexander Hasse
4:00 pm to 4:10 pm	**Break**

Wednesday 26 August 2020	
	Session Fatigue 2
4:10 pm to 4:30 pm	FFW1039: Assessment of a Thermal Fatigue Test Conducted Under Cyclic Non-Proportional Loading Using Open Source CAE and Finite Element Analysis Methods, **Shosuke Miyahira** and Terutaka Fujioka
4:30 pm to 4:50 pm	FFW1013: A Fatigue–Reliability Analysis of Spot Welded Modified Tensile Shear (MTS) Specimens, **Ahmet H. Ertas and** Mustafa Akbulut
4:50 pm to 5:10 pm	FFW1015: A Comparative Study on Fatigue Life Prediction of Spot Welded Coach Peel (CP) and Modified Coach Peel (MCP) Type Test Specimens, **Mustafa Akbulut** and Ahmet H. Ertas
5:10 pm to 5:30 pm	FFW1025: Numerical methodology to predict subsurface crack initiation from non-metallic inclusions due to rolling contact fatigue, **G. Ravi**,Wim De Waele, Stijn Hertelé
5:30 pm to 5:50 pm	FFW1140: Applying the dual adhesive technique for strength improvement of bonded joints, C.L. Ferreira, **R.D.S.G. Campilho**, R.D.F. Moreira and I.J. Sánchez-Arce
5:50 pm to 6:10 pm	FFW1148: Considerations on the causes of increased fatigue re-sistance in a laser-processed eyelet of undercarriage drag strut, **Marek Szkodo**, Anna Bień and Alicja Stanisławska
6:10 pm to 6:30 pm	FFW1160: residual stress behavior on welding joints in different steels using x-ray diffraction, **A. Morales**, J.C. Arango, A.S. Marulanda, C.C. Palacio
6:30 pm to 6:50 pm	FFW1142: Mode shape based approach to identify the location of crack and the influence of crack on critical speed of gas turbine disc, Ranjan Kumar, **Vinayak Ranjan**, Saikat Chaterjee, Sanjoy K Ghoshal

Thursday 27 August 2020	
	Session Fatigue 3
8:30 am to 8:50 am	FFW1130: Fracture Mechanics Performance of Through-Thickness Crack of Polymeric 3D Printed Components, **Waleed Ahmed**, Essam Zaneldin, and Souzan Kabbani
8:50 am to 9:10 am	FFW1079: Experimental Characterization of Vibration on Gearing Mechanism Using Taguchi Approach, H.I.Mirzayev, **Y. Sahin**, A.Z.Xəlilovand R.S.Valili
9:10 am to 9:30 am	FFW1008: Prognosis of Damage Intensity on Reinforced Concrete Beam under Cyclic Loading, **Noorsuhada Md Nor**, Soffian Noor Mat Saliah1, Shahrum Abdullah, Norrul Azmi Yahya and Masyitah Md Nujid
9:30 am to 9:50 am	FFW1139: Composite stepped-lap adhesive joint analysis by cohesive zone modelling, R.F.N. Brito, **R.D.S.G. Campilho**, R.D.F. Moreira and I.J. Sánchez-Arce
9:50 am to 10:10 am	FFW1067: Effect of contact pressure and stress ratio on the fretting fatigue behavior of Ti-900 fretted against Ti-685, **K. Yokesh**, Murthy Haradanahalli, S. Ganesh Sundara Raman, D. Chandru Fernando and Anuradha Nayak Majila
10:10 am to 10:30 am	FFW1086: Depreciation Accounting in Longevity Evaluation of Complicated systems, **B. Avotyn**, A. Smirnov, B. Belobragin
10:30 am to 10:50 am	FFW1097: Fatigue assessment of aged steel specimens under uniaxial cyclic loading, **A. Yosri**, A. Zayed, S. Saad-Eldeen and H. Leheta
10:50 am to 11:10 am	FFW1152: Numerical Analysis of the Wind Turbine Pitch Bearing Raceway Tribo-Contact Due to Cyclic Loading under Constant Pitch Angle, **David Cubillas**, Mireia Olave, Iñigo Llaviori, Ibai Ulacia, Jon Larrañaga, Aitor Zurutuza and Arkaitz Lopez
11:10 am to 11:20 am	**Break**
	Session Wear 1
11:20 am to 11:40 am	FFW1141: Surface roughness and normal force effects on the sliding and rolling behavior of POM-H rolls, **Leonhard Kilian Doppelbauer**, Philipp Siegfried Stelzer, and Zoltan Major
11:40 am to 12:00 pm	FFW1009: Study of sliding wear in rail and wheel steels: effect of hardness ratio and normal load in pin on disc test, **Thiago Gomes Viana**, Gustavo Tressia and Amilton Sinatora
12:00 pm to 12:20 pm	FFW1040: Abrasive wear behavior, mechanical properties and fire resistance performance of marble-polyester composite, **Juana Abenojar**, Miguel Angel Martínez, Sara López de Armentia
12:20 pm to 12:40 pm	FFW1050: Effect of the work parameters variation in pin-on-disk tests, M.A. Martinez, J. Abenojar, S. Lopez de Armentia, **Jose Antonio Butanegro**
12:40 pm to 1:00 pm	FFW1084: Effects of Ti-6Al-4V surface condition on the perfor-mance of DFL lifetimes, E. Laolu-Balogun, S.P. Owen, S. Read, G. Pattinson, P.H. Shipway and **K.T. Voisey**
1:00 pm to 1:20 pm	FFW1113: Micro-abrasive wear behavior study of an intermetallic material – Fe-30Al-6Cr (at.%) under conditions of room and moderate temperatures: a comparison, Eduardo K. T. M. Silva, Jorge H. Luna-Domínguez, Vikas Verma and **Ronaldo Câmara Cozza**
1:20 pm to 2:00 pm	**Break**
2:00 pm to 2:30 pm	**Poster presentations + Discussions**

Thursday 27 August 2020	
	Poster session
2:00 pm to 2:30 pm	FFW1023: Damage evaluation of free-free beam based on vibration testing, **Duong Huong Nguyen**, Viet Long Ho, T. Bui-Tien, Guido De Roeck and Magd Abdel Wahab
	FFW1146: A comparative study on indentation and flattening contacts, **Qingming Deng**, Xiaochun Yin, Magd Abdel Wahab
	FFW1104: Hydrogen degradation effects on crack propagation in high strength steels: a fully coupled approach, **B. Sobhaniaragh**, S.H. Afzalimir, C. Ruggieri
	FFW1121: Failure Analysis of a Fuel Control Tube from an Aircraft Engine, Valles González, María Pilar; **García-Martínez, María**; Pastor Muro, Anaand González Meije, Alejandro
	FFW1133: D-Beam theory for Functionally Graded Double Cantilever Beam analysis, Calogero Orlando
	FFW1134: Study of wear on AISI E52100 steel using a lithium complex grease and a calcium sulfonate grease, J. F. Márquez-Santiago, **M. Vite-Torres** and E. A. Gallardo-Hernandez
	FFW1083; Fretting wear effect on fretting fatigue by Findley parameter in mixed slip regime, **S. Wang** and M. Abdel Wahab
	FFW1138: Numerical treatment of fractional differential models, **Angelamaria Cardone**, Dajana Conte, and Beatrice Paternoster
	FFW1143: Time-delay fractional optimal control problems: A survey based on methodology, Dajana Conte, Eslam Farsimadan, **Leila Moradi**, Francesco Palmieri, and Beatrice Paternoster
	FFW1137: Coincidence of stereometric and tribometric studies of friction pair components, **Magdalena Niemczewska-Wójcik**, Artur Wójcik
	FFW1064: Determination of the effective stiffness of half-open cross-section bars and orthotropic steel deck of a truss bridge using model updating, **Long Viet Ho**, Guido De Roeck, Thanh Bui-Tien and Magd Abdel Wahab
	FFW1119: A Heat Transfer Finite Element Model for Wire-Arc-Additive-Manufacturing Process, **Y. Ling**, J. Ni, M.A. Wahab, J. Antonissen, J. Vande Voorde
	FFW1095: Application of improved artificial neural network to stiffness reduction analysis of truss joints in a railway bridge, **H. Tran-Ngoc**, L. Nguyen-Ngoc, H. Ho-Khac, S Khatir, A. Le-Thuc, G. De Roeck, T. Bui-Tien, and M. Abdel Wahab
	FFW1112: Effect of Cross-Over Fraction on Objective Function Value in Genetic Algorithm Optimization of Machining Parameters in Diamond Turning of Aluminum Alloy (RSA-431) For Optical Applications, Oyekunle Funsho, **Khaled Abou-El-Hossein**
	FFW1002: A model for prediction and optimization of Flank wear in End Milling of AISI 316 stainless steel, Odedeyi Peter Babatunde and **Abou-El-Hossein Khaled**
	FFW1129: Acoustic wear monitoring during the milling of tool steel for machining 4.0, O.A. Olufayo and **K. Abou-El-Hossein**
	FFW1135: The application of an image-processing method and fractal analysis for quantitative characterization of thermal cracks in a cement matrix, **Maciej Szeląg**

Thursday 27 August 2020	
	Session Wear 2
2:30 pm to 2:50 pm	FFW1078: Microstructure and abrasive wear of particle-filled composites, **Y. Şahin** and H.Şahin
2:50 pm to 3:10 pm	FFW1070: Friction Coefficient of Cu-Ni-In and CoCrAlYSi–hBN Coated Ti-6Al-4V Fretted Against Alumina Counterbody with and without MoS2 at the Contact Surface, **S.V. Abhinay**, S. Ganesh Sundara Raman, G. Sivakumar
3:10 pm to 3:30 pm	FFW1093: Predicting Rebound of Ellipsoidal Granules Using SPH, **Dhairya R. Vyas**, Sharen J. Cummins, Murray Rudman, Gary W. Delaney, Paul W. Cleary and Devang V. Khakhar
3:30 pm to 3:50 pm	FFW1149: Effect of MAO coatings on cavitation erosion and tribological properties of 5056 and 7075 aluminum alloys, **Marek Szkodo**, Alicja Stanisławska, Aleksandr Komarov and Łukasz Bolewski
3:50 pm to 4:10 pm	FFW1132: An in-house real-time friction prediction tool for optimizing the design of moulds prior to the production, **B. Hernández-Gascón**, V. Zambrano, J. Larroy, M. Brase, M. Wangenheim and J. R. Valdés
4:10 pm to 4:20 pm	**Break**
	Session Fracture 2
4:20 pm to 4:40 pm	FFW1122: Detection of damage in RC beams strengthened with NSM CFRP rectangular rod by Finite Element Modeling, **Erica Magagnini** and Roberto Capozucca
4:40 pm to 5:00 pm	FFW1123: Particle swarm optimisation-based support vector regression model to estimate the powder factor of explosives in groundwater tunnel driving, **E. de Miguel-Garcia**, K. Martin-Chinea, J.F. Gomez-Gonzalez
5:00 pm to 5:20 pm	FFW1077: Proposal for new hardness concept using Herbert hardness tester, **Masaaki Matsubara**, Masayoshi Nakamura, Ryosuke Suzuki
5:20 pm to 5:30 pm	FFW1147: Failure Analysis of Strip Foundation on Layered Soil under Static Loading, **Masyitah Md Nujid**, Fatimah Abdul Rahman, Ng Kok Shien, Noorsuhada Md Noor, Juraidah Ahmad, Nor Faizah Bawadi, Ali Akhbar Firoozi and E Kusmawati Suparmanto
5:30 pm to 5:50 pm	FFW1154: Evaluation of the residual stress behavior of 316L stainless steel in electric generator blades subjected to different hours of service, **A. Morales-Ortiz**, J.C. Arango, C.C. Palacio
5:50 pm to 6:10 pm	FFW1090: Investigation of Flow Forming Process and Heat Treatment Effects on 2024 Aluminium Tubes, **Acar Can Kocabıçak**, Aptullah Karakaş, Güneş Aydın and Senai Yalçınkaya
6:10 pm to 6:20 pm	**Conference closing address – Prof. M Abdel Wahab**

FFW 2020

INSTRUCTIONS TO SPEAKERS

- Your online oral presentation should not exceed **15 minutes**. If your presentation stretches over **15 minutes**, you must end your presentation to ensure strict adherence to the programme.
- Your presentation will be followed by a Question and Answer (Q/A) session not exceeding **5 minutes**.
- Please upload a pre-registered video presentation in your submission system. This pre-registered presentation will be used as backup and for voting for the best oral presentation award.
- All uploaded pre-registered videos will be available on the conference website: http://www.academicconf.com/video?confname=ffw2020

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- Please design your poster in one A4 paper.
- Upload your poster in the submission system.
- All uploaded posters will be available on the conference website: http://www.academicconf.com/poster?confname=ffw2020
- During the posters session Question and Answer (Q/A) is planned, and posters presenters are requested to be available to answer the questions.