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**DIPARTIMENTO DI
SCIENZE E TECNOLOGIE
AEROSPAZIALI**



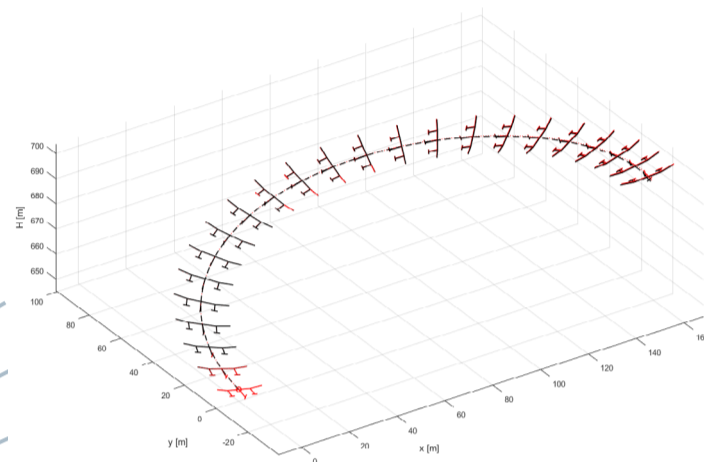
Speedup of Aerodynamic and Aeroelastic Analysis of Fixed Wing Aircraft

Dr Andrea Da Ronch

8 October 2018, h. 16:15

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Despite the increasing availability of computational resources, the adoption of higher fidelity methods than those currently used in the aerospace industry is hindered by CPU requirements. The



talk will touch on two methodologies that we have developed, implemented and demonstrated in response to some industrial challenges. The first methodology, which was commissioned by Airbus Operations Ltd, consists of an efficient algorithm

to solve the Navier-Stokes equations for steady and unsteady flow problems. It was specifically developed to reduce the time it takes for the aerospace industry to assess the impact that aerodynamic changes have on the structural loads. The new implementation was recorded to achieve speed-ups of 85% or above compared to existing state-of-the-art methods. The second methodology allows speeding up the time domain aeroelastic analysis of flexible aircraft. The application includes the flight dynamics of a flexible aircraft carried out in collaboration with a Brazilian institute which is performing flight tests on the experimental platform.

Short Bio



Dr Andrea Da Ronch is a Tenured Lecturer (Associate Professor equivalent in the US system) at the University of Southampton, a member of the prestigious Russell group of UK Universities. He coordinates a group of 10 researchers (PhD researchers and research associates) and manages a portfolio of projects in excess of £1,000,000

as the Principal Investigator or Co-Investigator. He is or has been funded by the Engineering and Physical Sciences Research Council (EPSRC), the Royal Academy of Engineering (RAEng), the Air Force Office of Scientific Research (AFOSR), the European Commission Horizon 2020, Airbus Operations Ltd, and by Governments of China and Brazil. His research interests are in computational aerodynamics and aeroelasticity, with a specific attention to support industry solving some practical problems: for his past work, he has been featured in the bulletin by the Royal Academy of Engineering (see the figure below). He was awarded a Master Degree in Aeronautical Engineering from Politecnico di Milano (Italy) in 2008, a Doctorate degree from the University of Liverpool (UK) in 2012, and he was appointed to a permanent academic position in a world-leading University.

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