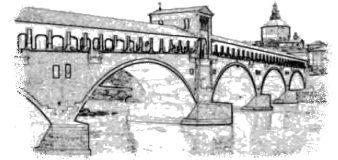




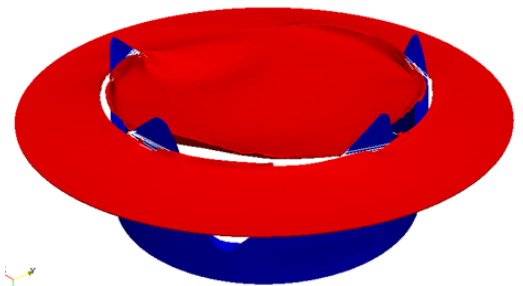
Short Course

“EXPLICIT DYNAMICS FINITE ELEMENT ANALYSES”



Department of Civil Engineering and Architecture
February 22nd, 2017

- ✓ Newmark's method for the time integration of the equation of motion
- ✓ Central difference scheme
- ✓ Stability of the integration scheme
 - ✧ Linear stability – CFL condition
 - ✧ Nonlinear stability
- ✓ Lumped mass matrix
- ✓ Energy balance for stability check
- ✓ Practical computation of critical time step
- ✓ Accuracy of the central difference method
- ✓ Central difference scheme with varying time step
- ✓ Damping
- ✓ Computational aspects of explicit time integration
- ✓ GPU implementation
- ✓ Structural dynamics problems vs. wave propagation problems
- ✓ Explicit methods vs. implicit methods
- ✓ Practical applicability of explicit time integration methods to slow dynamics problems
- ✓ Mass scaling and selective mass scaling



[Pagani and Perego, Explicit dynamics simulation of blade cutting..., 2015]

LECTURER

Prof. **Umberto Perego**

Department of Civil and Environmental Engineering
Politecnico di Milano

Short CV: Umberto Perego, PhD, is full professor of Structural Mechanics at the School of Civil, Environmental and Land Management Engineering of the Politecnico di Milano. His research interests are in the field of the computational mechanics of materials and structures. He is the author of about 130 papers at conferences and on international peer-reviewed journals. In 2002 he has been awarded the "Bruno Finzi" Prize for rational mechanics by the Istituto Lombardo Accademia di Scienze e Lettere. In 2008 he has been elected Fellow of the International Association for Computational Mechanics (IACM). In the period 2000-2004 he has been the Chairman of the Italian Group of Computational Mechanics (GIMC), an AIMETA affiliated Society. Since 2008 he is the vice-president of the ECCOMAS Committee on Computational Solids and Structural Mechanics. From 2001 to 2006 he has been Associate Editor of the European Journal of Mechanics A/Solids. He is now member of the Editorial Board of three international journals. He has been invited several times to deliver plenary, semi-plenary and keynote lectures at international conferences and minisymposia.

He has been the promoter and organizer of several workshops and international conferences. In particular, in 2008, he has been the Chairman, together with B. Schrefler, of the Joint 8th World Congress on Computational Mechanics and 5th Eccomas Congress in Venice.

DATE & VENUE

February 22nd, 2017; 10:00am – 12:00pm & 2:00pm – 4:00pm
DICAr – MS1 meeting room (ground floor) Via Ferrata 3, Pavia

REGISTRATION

Participants need to register sending an e-mail to the Secretariat: sonia.padovan@unipv.it