



Development of Advanced Structural Analysis Technology with the New Structural Modeling

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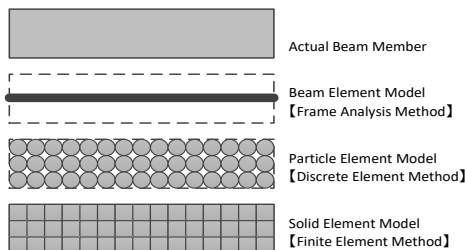
Research Fields Structural Engineering, Computer Aided Engineering

Keywords Structural Analysis, Parallel Computing, OpenSource CAE

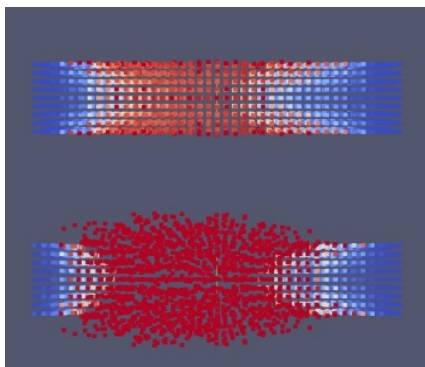
● Research Outline

Peridynamic Fracture Mechanics

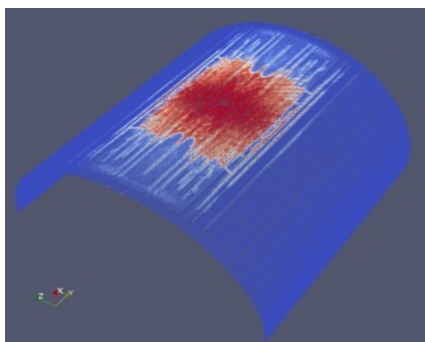
The purpose of this paper is to investigate the applicability of Peridynamic Fracture Mechanics in the field of the fracture and collapse behaviour of a concrete shell structure. In order to analyse non-continuous breakdown phenomenon of the shell, the concrete shell is modelled by peridynamical particle elements. The structural behaviour of the shells is represented and calculated as dynamics motion of molecular particles connected by visco-elastic springs in the numerical simulation.



New Structural Modeling



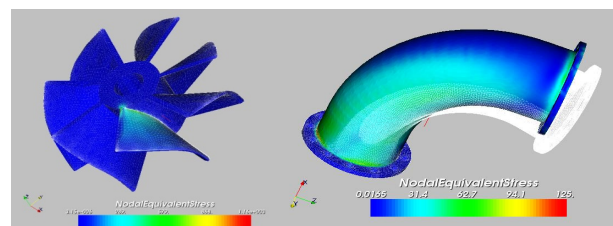
Fracture of Compression on Beam



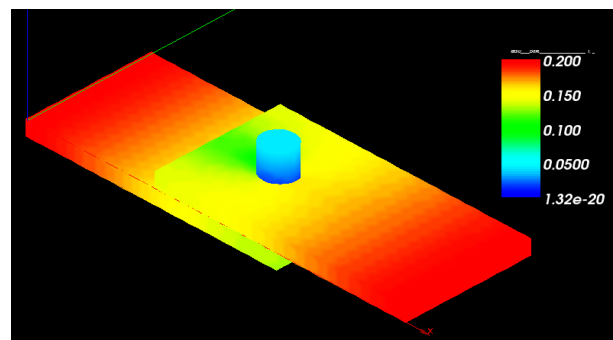
Fracture of Concrete Shell Structure

OpenSource CAE : DEXCS

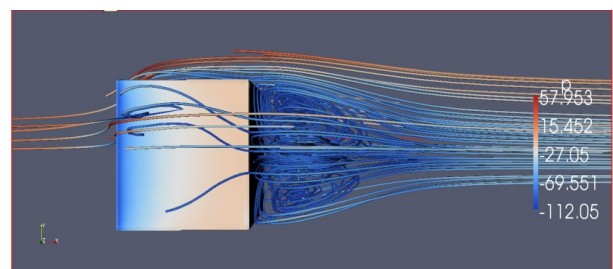
This study aims to develop a portable CAE system, "DEXCS", for the use of educational institutions. DEXCS is a Linux-based CAE system, which uses ICD-Linux by booting a usual Windows PC with a DEXCS-CD. The basic function of DEXCS in this study is designed for structural analysis, and an all-in-one system that includes pre-post processing. It enables to omit the installation process, and generates analysis model, executes numerical analysis and visualizes numerical results, consecutively as a workflow.



Basic Strucrual Analysis : (ADVENTURE)



Practical Strucrual Analysis : (SALOME-Meca)



Practical Fluid Analysis : (OpenFOAM)