



**DEPARTMENT OF MECHANICAL ENGINEERING
Purdue School of Engineering and Technology**

SEMINAR

Date: Friday, August 8, 2003

Time: 11:00 am - 12:00 pm

Room: SL 165

**Cookie and Refreshments Served
Everyone is Invited**

Grid Generation and Partitioning for Grid-free Solvers

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In this presentation, summer projects of two intern students currently working at the IUPUI CFD Laboratory will be presented. They are senior students in Computer Engineering Department of Ecole Supérieure d'Ingenieurs de Luminy, Marseille-France. Their work is intended to support a grid-free flow solver development. In the presentation, there will be a short introduction to grid-free solver concept. Then, it will be followed by two parts. In the first part, the best connectivity possible for the grid-free solver will be discussed. Triangulation around a point is accomplished by using Delaunay triangulation method. Grid elements generated around a point are almost equilateral triangles. In addition to the Delaunay's triangulation, other methods are also used to improve grid quality, such as removing redundant nodes, merging triangles, and closing convex hull. In the second part, parallel partitioning of a set of points will be accomplished. Two different methods have been demonstrated. First one is by using k-nearest neighbors of each point. Second one is to create a Delaunay triangulation and then combining it with the METIS partitioning library.