



AIAA

American Institute of
Aeronautics and Astronautics
Dayton-Cincinnati Section

Lunch 'n' Learn

CHIMERA: A JOURNEY

Guest Speaker:
Dr. John A. Benek

Friday, 26 May 2017
11:45 AM



Abstract: A common difficulty in simulating complex fluid flow problems is that not every geometry can be well-represented using a single, contiguous (structured or unstructured) grid. In many cases, different geometrical features are best represented by different grid types. One way to solve these difficulties is the construction of a grid system made up of blocks of overlapping structured grids. This technique is referred to as the *Chimera* or *overset* grid approach. In a full Chimera grid system, a complex geometry is decomposed into a system of geometrically simple overlapping grids. Boundary information is exchanged between these grids via interpolation of the flow variables, and many grid points may not be used in the solution (these points are sometimes called *hole points*). Each block has boundary or *fringe points*, which lie in the interior of a neighboring block(s) and require information from that containing block. Steger, circa [1980] independently conceived the idea of the overlapping grid, subsequently named the *Chimera* approach after the mythical Chimera beast having a human face, a lion's mane and legs, a goat's body, and dragon's tail. NASA groups developed the grid generator PEGSUS, hyperbolic grid generation and flow solver *Overflow* (Steger, Benek, Suhs, Buning, Chan, Meakin, et. al.). This talk will be Dr. Benek's personal reminiscences on aspects of the development of the *Chimera* overset grid method. As such many who have made contributions to overset mesh methods are not mentioned in this presentation.

Speaker: Dr. John A. Benek, a member of the scientific and professional cadre of senior executives, is Senior Scientist for Computational Fluid Dynamics, Aerospace Systems Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio. He provides leadership and strategic vision for the Directorate's research and development programs in high-fidelity, physics-based modeling of fluid flows and fluid-coupled multidisciplinary phenomena. In addition, he advises the Air Force on fluid-flow simulation capability.

Location

China Garden Buffett
Airway Center
112 Woodman Drive
Dayton OH 45432

Lunch

Buffett style, all-you-can-eat Asian cuisine.

