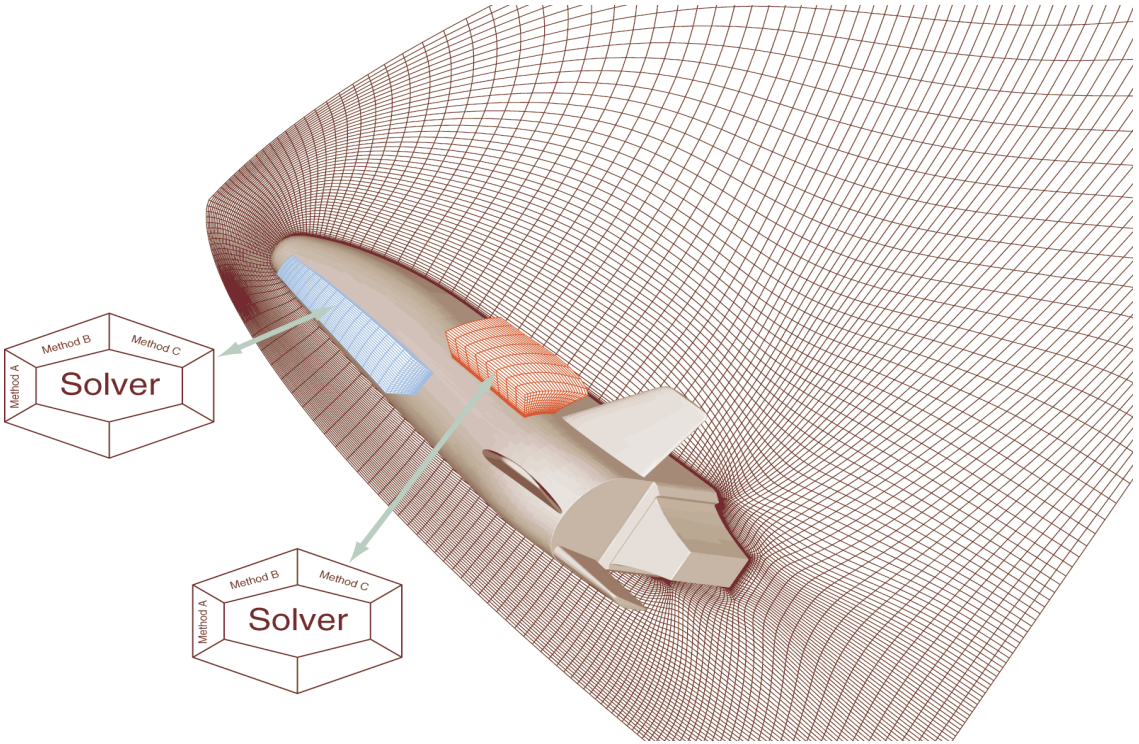
Aerodynamische Simulation und Optimierung in der Flugzeugentwicklung



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J. Häuser, T. Gollnick, T. Ludewig

Dept. of HPCC, CLE and Univ. of Applied Sciences

Salzgitter, Germany,

www.cle.de/cfd,

jh@cle.de

Research Topics

Three Grid Utilities

Optimization and Automatic Topology Design for Hexahedral Grids

Java Ultra Simulator Technology (HPCC)

Numerical Solution Strategy Using HLLC

Internet Based Steering and Visualization of Simulation Codes through Java3D and Swing

Java Embedded Systems for Microdevices and Robotics

Three Grid Utilities

Automatic Conversion of CAD Data

Special Cadfix Version for GridPro

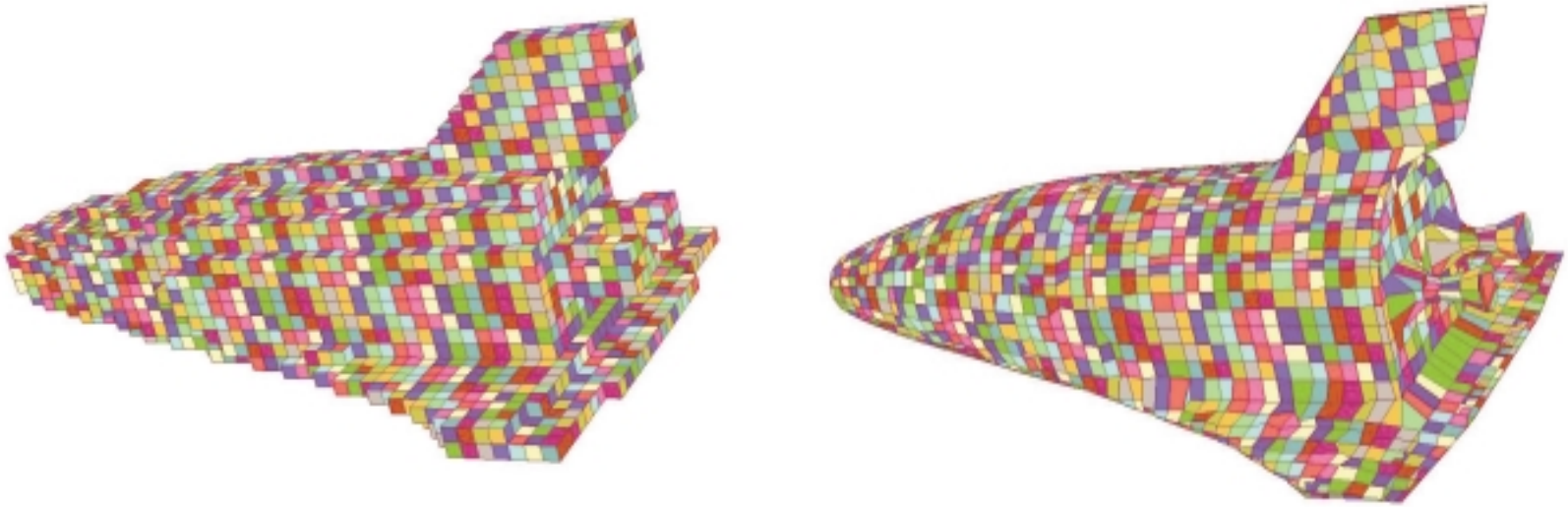
IGES, Catia, VDA, STL etc. are directly converted into triangularized GridPro surfaces

Grid Optimization through Reengineering

Any hexahedral multiblock grid can be reengineered to optimize orthogonality, smoothness, and cell aspect ratio. Convergence speed up between 3 and 10 in comparison with the original grid has been measured. In addidition, numerical solution accuracy was substantially improved.

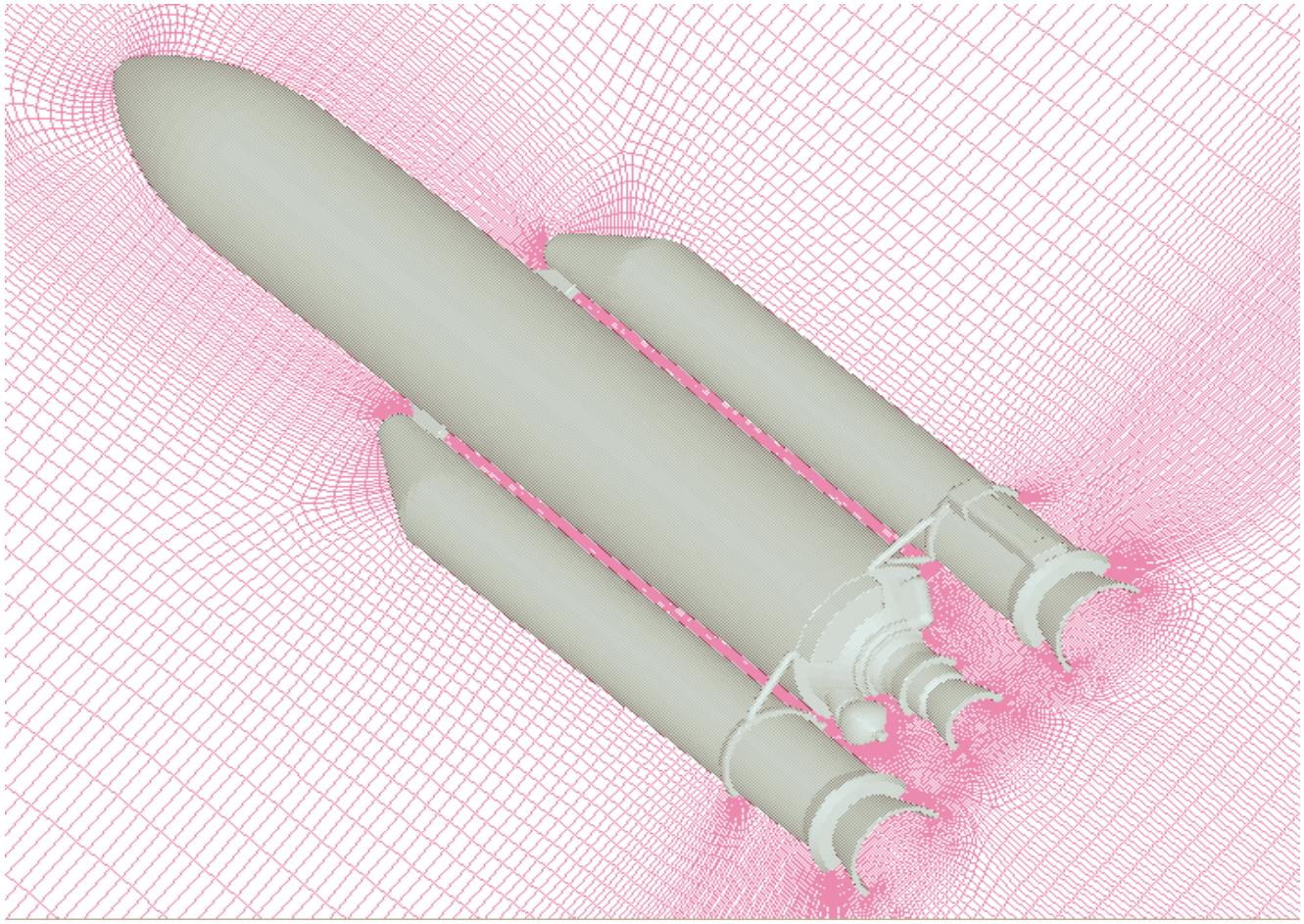
Automatic Grid Enrichment

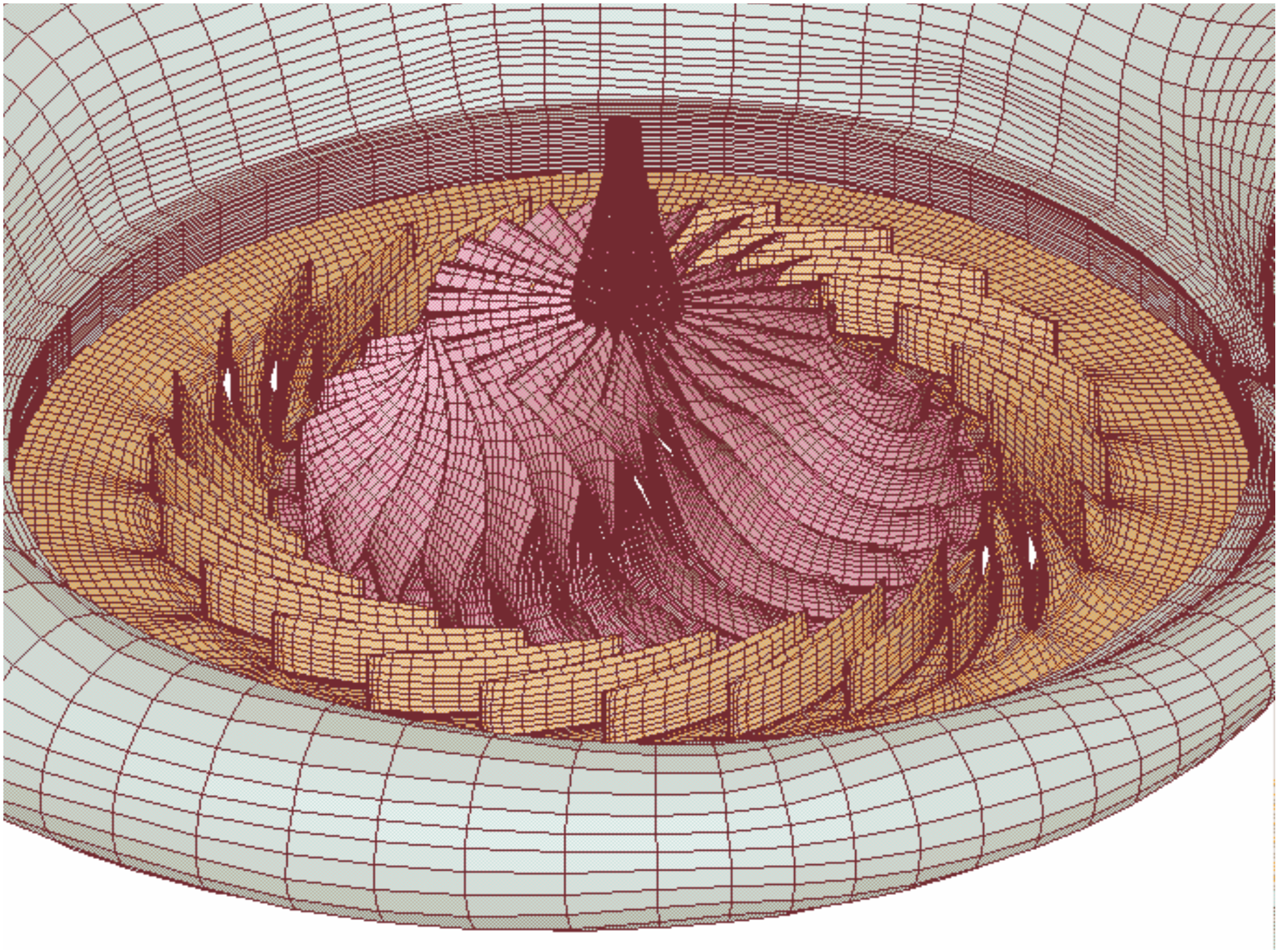
Any hexahedral multiblock **grid can be converted within minutes from Euler to Navier-Stokes** *by enrichment and also specifying, for instance, the distance of the first grid point from the wall, but retaining optimized grid features like orthogonality, smoothness, and cell aspect ratio.*



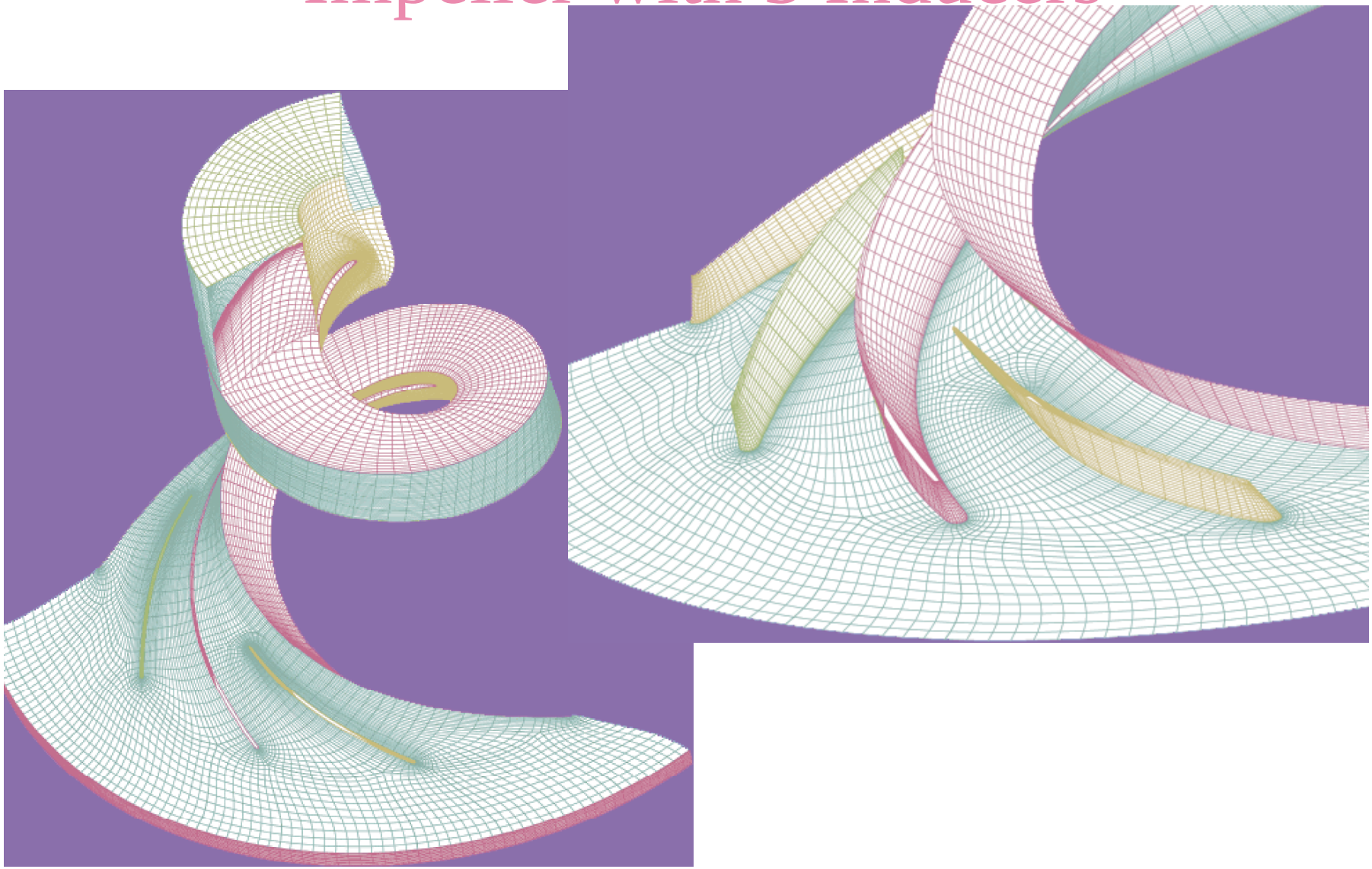
Optimization and Automatic Topology Design for Hexahedral Grids

Trimmed Extrusion Technique
Medial Axis Based Topology
Iterative Topology Generation
Automation of Control Surface Generation



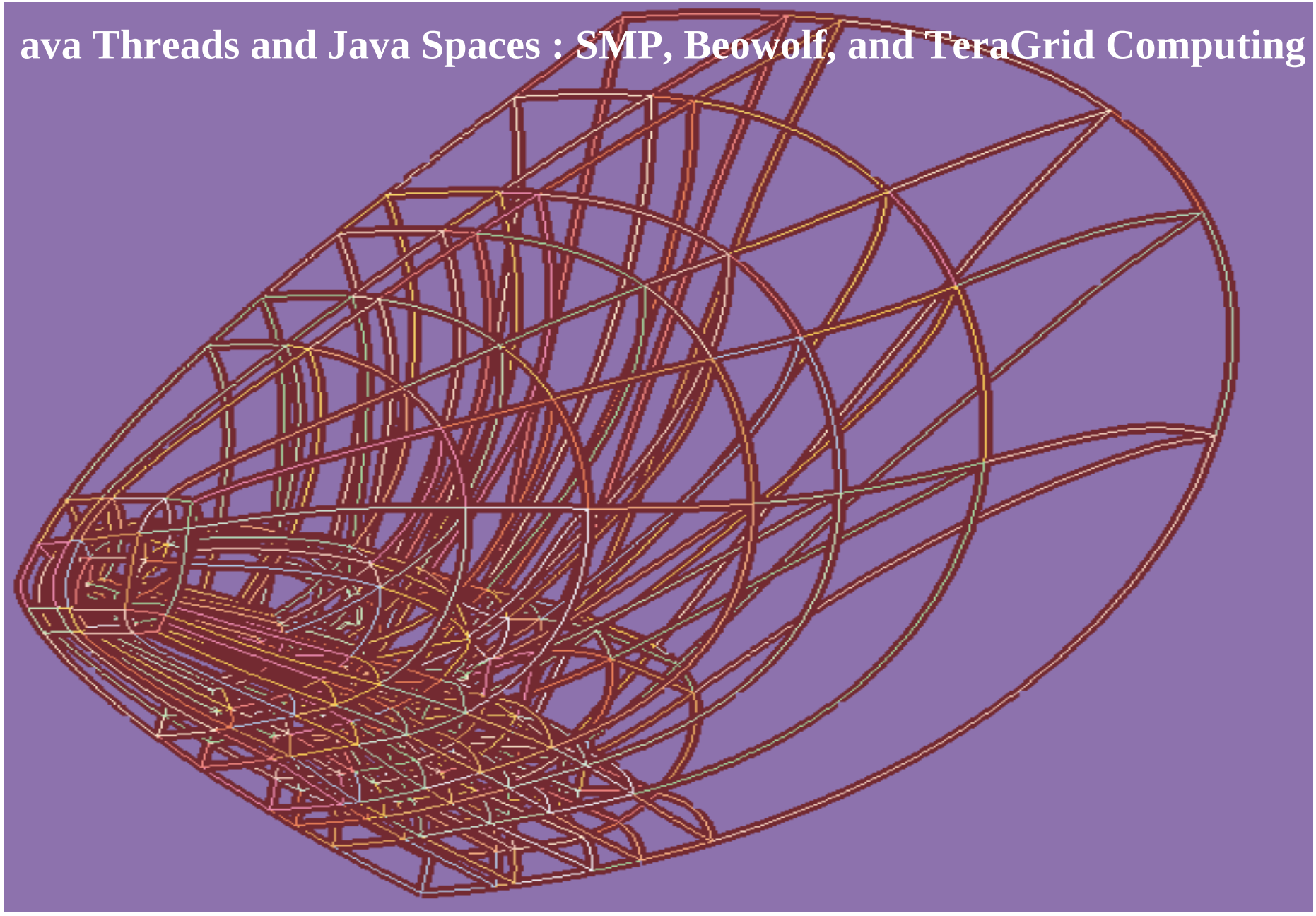


Impeller with 3 Inducers



Java Ultra Simulator Technology (HPCC)

ava Threads and Java Spaces : SMP, Beowolf, and TeraGrid Computing



Numerical Solution Strategy Using HLLC

Harten, Lax, van Leer, Contact discontinuity

flux computation by approximate Riemann solvers based based on triple wave speeds

Internet Based Steering and Visualization of Simulation Codes through Java3D and Swing

Java Embedded Systems forMicrodevices and Robotics

A Java Virtual Machine (6K) has been loaded on the Lego RCX chip and with object-oriented programming some kind of artificial intelligence can be provided to Lego robots. As an example, hardware from Lego's inventor kit was used.