BHE 015
Finite Element Mesh Requirements for Patient-Specific Blood Vessels

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Abstract
The long-term goal of this project is to establish an adaptive mesh refinement methodology that will set a benchmark of requirements for hexahedral mesh resolution in three-dimensional computational Hemodynamics and solid dynamics of large blood vessels. The objective of this proposal is to develop a methodology for the semi-automatic generation of hexahedral meshes in anatomical blood vessel models for the fluid (lumen) and solid (vessel wall, thrombus and calcification) domains. Mathematical, computational, and imaging techniques will be utilized to reconstruct the patient-based vessel geometries, extrude an anatomically realistic wall thickness, and generate finite element meshes comprised of hexahedral elements.