

BI-CO MATHEMATICS COLLOQUIUM

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“Morphoelasticity: The Mechanics and Mathematics of Elastic Growth”

Monday, September 21, 2009

Talk at 4:15 – KINSC H109

Tea at 4:00 – KINSC Math Lounge, H208

Abstract: In many cylindrical structures in biology, residual stress fields are created through differential growth. In particular, if the outer and inner layers of a cylinder grow at different rates, parts of the cylinder will be in a state of axial compression and other parts will be in tension. These tissue tensions play a fundamental role in the overall rigidity and stability of the cylinder. In this talk I will discuss the mechanical stability of growing arteries and the role of residual stresses. Furthermore, I will also briefly discuss how cavity opening in elastic tissues can be induced by residual stresses generated by differential growth.

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