

Analysis and Applied Mathematics Seminar

Homogenization of a system of elastic and reaction-diffusion equations modelling plant cell wall biomechanics

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Abstract: I will present a microscopic model for plant cell wall biomechanics that takes into account both the microstructure coming from the cellulose microfibrils and the chemical reactions between the cell wall's constituents. Particular attention is paid to the role of pectin and the impact of calcium-pectin cross-linking chemistry on the mechanical properties of the cell wall. An outline of how to prove existence and uniqueness of the microscopic system will be given. Finally, a multiscale analysis in the form of homogenization is carried out to obtain a macroscopic model. I will include a brief introduction to homogenization in my talk.

Monday, November 16 at 4:00 PM in SEO 636
