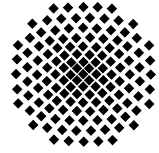


Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Intelligente Systeme
Max-Planck-Institut für Festkörperforschung
Fachbereich Physik, Universität Stuttgart

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Dienstag, 8. Mai 2012

17.15 Uhr

Hörsaal 2 D5

Stuttgarter Max-Planck-Institute, Heisenbergstraße 1, 70569 Stuttgart-Büsnau

Gastgeber: Prof. Siegfried Dietrich, Max-Planck-Institut für Intelligente Systeme, Telefon: 0711 - 689-1920

Mechanics and growth of tissues

Jean-François Joanny

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Abstract

In this talk, I present recent results on the growth and mechanical properties of healthy and cancerous tissues. I first show that because of the coupling between cell division and local stress, a tissue can be considered as a visco-elastic liquid with a relaxation time smaller than the cell division time. I also discuss the role of the interstitial liquid between cells. Examples are given of the liquid behavior related to the competition for space between two tissues and the stability of the interface between two tissues is discussed.

Finally, I discuss the steady state structure of villis which are the protrusions of the surface of the intestine or the colon. We describe the formation of villis as a buckling instability of a polar cell monolayer. The polarity of the layer does not seem to play a role in the intestine where the villis are arranged in a square array but it is important in the colon where they are organized in a hexagonal array.