

THE STABILITY OF GROWING ELASTIC BODIES.

ALAIN GORIELY* AND MARTINE BEN AMAR†

* Department of Mathematics and Program in Applied Mathematics
University of Arizona
Tucson, AZ 85716, USA
goriely@math.arizona.edu

† Laboratoire de Physique Statistique
Ecole Normale Supérieure
24 rue Lhomond
F75231 Paris Cedex 05, France

Growth is involved in many fundamental biological processes such as morphogenesis, physiological regulation, or pathological disorders [1]. It is, in general, a process of enormous complexity involving genetic, biochemical, and physical components at many different scales and with complex interactions. In this talk, I will consider the modeling of elastic growth in elastic materials and investigate its mechanical consequences. We will see that growth affects the geometry of a body by changing typical length scales but also its mechanics by inducing residual stresses. The competition between these two effects can be used to regulate the physical properties of a material during regular physiological conditions. It can also lead to interesting spontaneous instabilities in growing materials [2-3] as observed in simple physical systems.

References

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