This work is based on Antti Pihlaja’s thesis, *Modeling Grain Boundary Structures Using Energy Minimization*, 2000, supervised by R. Kohn at NYU.

- Introduction to the model: interfacial energy of a 2-dimensional thin film-substrate system
- Variational character of the problem
- Improving Leo & Hu’s interfacial energy model
Incoherence at thin film-substrate interfaces

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**Figure:** Interface $S$ and lattices after deformation

- Cermelli & Gurtin’s incoherency tensor
- Theorem: Energy scaling of the interface

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$^{1}$Figure adapted from Cermelli & Gurtin, *On the kinematics of incoherent phase transitions*, Acta Metall. Mater., 1994.