

# Analysis of a boundary layer in a discrete-to-continuum problem.

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## **Abstract**

I will present the discrete-to-continuum limit of a non-locally interacting particle system where the unknowns are the positions of the particles on the one dimensional half line. This particle system arises as a model for understanding plasticity of crystals (the particles represent dislocation walls).

Interestingly, the solution to the particle system exhibits a boundary layer which is not recovered by the continuous solution (i.e. the density profile of the particles as predicted by the upscaled problem). I will show how to characterize this boundary layer in a variational framework by using  $\Gamma$ -convergence.