

*Hinode-3: 3rd Hinode Science Meeting  
Hitotsubashi Memorial Hall, Tokyo  
1-4 December, 2009*

## **MHD flux emergence simulations through a convecting layer**

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**Abstract.** We have carried out numerical simulations of emergent magnetic flux through a convecting layer that includes granules and mesogranules, and into the first several hundred kilometers of the atmosphere, in models with horizontal size 24-48 Mm and vertical size 20 Mm. Convection spontaneously forms magnetic field structures in and around the surface as well as deeper down. We study in high resolution these and other structures and compare them with recent Hinode observations.