Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

**Particle migration in granular suspensions: a numerical study of sedimentation processes** DAVIDE MONSORNO, MILTIADIS PAPALEXANDRIS, Université catholique de Louvain — In granular suspensions, the particle concentration can vary as a result of convective transport or due to particle migration. These suspensions can often be described as two-phase continuum mixtures; in this case, concentration is expressed by the granular volume fraction. Volume-fraction variations due to particle migration can not be neglected in many flows of practical interest, such as sedimentation processes. From a mathematical perspective, particle migration is associated with a velocity field which is not solenoidal; the numerical treatment of this type of flows can be difficult. In the first part of this talk we elaborate on the challenges presented by their numerical modeling. In the second part of the talk we present numerical results for two flow cases where volume-fraction variations are of primary importance. First, we consider the sedimentation of a dense granular bed under water; we discuss the settling process and the terminal profile (hydrostatics). Subsequently we consider the collapse of a sand column submerged under water. Our results show the formation of a static pile and a turbidity current that is developed due to the collapse.

Davide Monsorno
Université catholique de Louvain

Date submitted: 24 Jul 2017 Electronic form version 1.4