Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

**The effect of drainage channels on the hydrodynamic drag of non-colloidal spheres down an inclined plane.**[1] BRIAN RYU, CHARLES DHONG, JOELLE FRECHETTE, Johns Hopkins University — While it is well known that surface asperities and roughness alter the hydrodynamic drag of a non-colloidal sphere down an inclined plane, less is known about how the hydrodynamic drag is modified if the asperities and roughness are connected through a network of drainage channels, which allows the movement of fluid between asperities. We investigate the rotational and translation motion of spheres on several pairs of surfaces that have the same porosity and asperity size, but one surface has interconnected drainage channels whereas the other does not. These can have direct relevance to lubricated surfaces such as ball bearings in industrial settings, or biological relevance of leucocyte movement across rough surfaces.

[1]Provost's Undergraduate Research Awards, Office of Naval Research, National Science Foundation

Charles Dhong
Johns Hopkins University

Date submitted: 06 Nov 2015 Electronic form version 1.4