

Abstract Submitted  
for the DFD14 Meeting of  
The American Physical Society

**Influence of particle shape on properties of force networks in particulate systems**<sup>1</sup> LOU KONDIC, NJIT, LUIS PUGNALONI, Universidad Tecnológica Nacional, La Plata, Argentina, MANUEL CARLEVARO, Instituto de Física de Líquidos y Sistemas Biológicos, La Plata, Argentina, MIROSLAV KRAMAR, KONSTANTIN MISCHAIKOW, Rutgers University — Simulations of particulate systems usually consider circular or spherical particles due to computational simplicity. Realistic particles however are often not circular or spherical, posing an important question: to what degree particles' shape influences mechanical properties of the corresponding systems? To start answering this question, we carry out MD simulations of circular and polygonal frictional particles exposed to tapping and analyze the resulting force networks. In addition to using classical measures, we carry out topological analysis that allows us to describe and quantify structural properties of the considered networks. Perhaps surprisingly, topological analysis allows us to identify the differences between systems that appear undistinguishable based on the classical measures.

<sup>1</sup>Supported by NSF Grant No. DMS-0835611.

Lou Kondic  
NJIT

Date submitted: 31 Jul 2014

Electronic form version 1.4