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Force landscape for particulate systems[1] LOU KONDIC, New Jersey Institute of Technology, MIROSLAV KRAMAR, Rutgers University, ARNAUD GOULLET, New Jersey Institute of Technology, KONSTANTIN MISCHAIKOW, Rutgers University — We discuss the properties of force landscape for isotropically compressed particulate systems characterized by a wide range of packing fractions. The computational methods used are based on persistence diagrams which allow for clear identification of mathematical properties of force landscapes and help their physical interpretation. We find that using this technique which previously has not been applied to particulate matter, a significant new information can be extracted, going much beyond separation into 'strong' and 'weak' force networks. One result of this analysis is clear indication that for small packing fractions, polydispersity is a crucial parameter that defines the landscape, while for large packing fractions, friction, if present, becomes dominant. Preliminary results for dynamical features of force networks obtained from time-dependent analysis of force landscapes will be presented as well.

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