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Topology of force chains in dense granular materials MIROSLAV KRAMAR, KONSTANTIN MISCHAIKOW, Rutgers, LOU KONDIC, YIGUANG YAN, NJIT — We will present a novel approach to study force chain structures of dense particulate systems. These structures are very important in understanding static and dynamic features of dense particulate systems. However, so far there is no well defined approach towards understanding them. Our approach deploys algebraic topology techniques which allow us to distinguish between the systems exposed to shear and compression. We use our method to compare experimental and theoretical results in a well defined and precise manner. We will also discuss how the topological measures can be used to understand the dynamic features of the system and correlate these measures to the phenomena such as jamming.

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