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**Topology of force chains in dense granular materials**[1] LOU KONDIC, YIGUANG YAN, NJIT, MIROSLAV KRAMAR, KONSTANTIN MISCHAIKOW, Rutgers — Force chain structures are well known and well researched due to their importance in determining static and dynamic features of dense particulate systems. However, so far there is no well defined approach towards understanding properties of these structures and distinguishing them in different systems. In this talk, we will present novel approach based on algebraic topology techniques that will be used to analyze and quantify force chain structures. In particular, we will discuss how these properties differ for the systems exposed to shear versus compression, and correlate the topological measures to the phenomena such as jamming. While the present talk will concentrate on the results of discrete element simulations, we will see that this new approach has a significant potential in comparing experimental and theoretical results in a well defined and precise manner.

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