1163-53-1284 **Enrique Alvarado*** (enrique.alvarado@wsu.edu), **Zhu Liu**, **Michael J Servis**, **Bala Krishnamoorthy** (kbala@wsu.edu) and **Aurora E Clark** (auclark@wsu.edu). *A Geometric Measure Theory Approach to Identify Complex Structural Features on Soft Matter Surfaces.*

The structural features that protrude above or below a soft matter interface are well-known to be related to interfacially mediated chemical reactivity and transport processes. It is a challenge to develop a robust algorithm for identifying these organized surface structures, as the morphology can be highly varied and they may exist on top of an interface containing significant interfacial roughness. A new algorithm that employs concepts from geometric measure theory, algebraic topology, and optimization, is developed to identify candidate structures at a soft matter surface, and then using a probabilistic approach, to rank their likelihood of being a complex structural feature. The algorithm is tested for a surfactant laden water/oil interface, where it is robust to identifying protrusions responsible for water transport against a set identified by visual inspection. To our knowledge, this is the first example of applying geometric measure theory to analyze the properties of a chemical/materials science system.

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