1154-53-559 **Brian D Harvie*** (bharvie@math.ucdavis.edu), 1 Shields Avenue, Mathematical Sciences Building, Davis, CA 95616. *The Non-Star-Shaped Regime of Inverse Mean Curvature Flow.*

Mean Curvature Flow (MCF) is a geometric flow which has garnered much attention from geometers since the 1980s. The study of MCF naturally motivates one to examine similar extrinsic flows, and among these is Inverse Mean Curvature Flow (IMCF).

Since the late 1990s, IMCF has been an increasingly important tool both in differential geometry and in general relativity. There appears to be an analogy between MCF and IMCF in the conditions one can impose on an initial surface to guarantee certain flow behavior: for MCF, requiring an initial surface to be convex assures the flow surfaces eventually resemble round spheres, while requiring an initial surface be star-shaped produces the same behavior for IMCF. While MCF over non-convex surfaces has been studied extensively (e.g. neckpinch singularities), the same cannot be said for IMCF over non-star-shaped surfaces.

This talk will focus on a recent paper of mine which characterizes some properties of non-star-shaped IMCF. Several of these results are analogues of very well-known properties of MCF (e.g. the avoidance principle, existence of finite-time singularities). Therefore, this talk will provide a link between the two flows, thus also providing a friendly introduction to the subject of geometric flows for newcomers. (Received September 06, 2019)