1159-35-40 **Salvatore Stuvard*** (stuvard@math.utexas.edu) and **Yoshihiro Tonegawa**. *An existence theorem for Brakke flow with fixed boundary conditions.*

Brakke flow is a measure-theoretic generalization of the mean curvature flow which exploits the flexibility of geometric measure theory in order to describe the evolution by (generalized) mean curvature of surfaces exhibiting singularities, such as, for instance, a planar network with multiple junctions. The primary goal of this talk is to discuss the proof of the following result: given any n-dimensional rectifiable subset Γ_0 of a strictly convex bounded domain $U \subset \mathbb{R}^{n+1}$ such that $U \setminus \Gamma_0$ is not connected, there exists a Brakke flow of surfaces $\Gamma(t)$ such that $\Gamma(0) = \Gamma_0$ and with the additional property that the boundary $\partial\Gamma(t)$ coincides with $\partial\Gamma_0$ at all times $t \geq 0$. Furthermore, $\Gamma(t)$ subconverge, as $t \to \infty$ and in a suitable sense, to a (generalized) minimal surface in U with the prescribed boundary $\partial\Gamma_0$, thus providing a dynamical solution to Plateau's problem. If time permits, I will also discuss recent developments concerning the relationship between the singularities of the initial surface Γ_0 and the uniqueness of the flow. (Received July 16, 2020)