Abstract:
The calculus of moving surfaces (CMS) is an extension of
differential geometry to deforming manifolds. The fundamental
equations of applied mathematics (the Laplace equation, the
heat equation and the wave equation) find intriguing CMS
equivalents, in which the surface itself is the unknown quantity.
I will describe the fundamental elements of the CMS and
illustrate a few of its many applications in differential geometry,
shape optimization and dynamics of fluid films. Along the way, I
will touch on a few interesting computational questions.