DON WITT, University of British Columbia
Soap Bubbles and $2+1$*-Gravity*

The existence of marginally outer trapped surfaces in $2+1$ gravity is mathematically very similar to the Plateau problem. This classic problem is to show the existence of a minimal surface satisfying a prescribed boundary condition. Soap bubbles suspended on a wire frame are a physical realization of these mathematical results. The existence of marginally outer trapped surfaces in $2+1$ gravity is determined by similar equations and boundary conditions. However, the outcome for this case is completely different, yielding non-existence results for marginally outer trapped surfaces in $2+1$ gravity. These results also apply in solution space quantizations of $2+1$-dimensional gravity.