

1171-35-70

**Donatella Danielli\*** (ddanielli@asu.edu) and **Alaa Haj Ali** (alaa.haj.ali@asu.edu). *A penalized boundary obstacle problem for the bi-Laplacian.*

In this talk we are concerned with a two-penalty boundary obstacle problem for the bi-Laplace operator in the upper unit ball. This problem arises in connection with unilateral phenomena for flat elastic plates. It can also be seen as an obstacle-type problem for the fractional Laplacian  $(-\Delta)^{3/2}$ . Our goals are to establish the well-posedness and the optimal regularity of the solution, and to study the structure of the free boundary. The proofs are based on monotonicity formulas of Almgren- and Monneau-type. (Received August 07, 2021)