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**Thomas Backing** and **Donatella Danielli\*** (dgarofal@purdue.edu), Department of Mathematics, West Lafayette, IN 47907, and **Rohit Jain**. *Regularity results for a penalized boundary obstacle problem.*

In this talk we will discuss the optimal regularity of solutions and the regularity of the free boundary for a two-penalty boundary obstacle problem modeling fluid flow through a permeable membrane. (Received January 31, 2017)