PROBABILITY SEMINAR

Wednesday 28.1 at 15:15 in Hilbertrummet

SPEAKER: ***Giorgio Ferrari***, Center for Mathematical Economics, Bielefeld University, Germany; giorgio.ferrari@uni-bielefeld.de

TITLE: *On the Optimal Boundary of a Three-Dimensional Singular Stochastic Control Problem Arising in Irreversible Investment*

ABSTRACT: In this talk we examine a Markovian model for the optimal irreversible investment problem of a firm aiming at minimizing total expected costs of production. We model market uncertainty and the cost of investment per unit of production capacity as two independent one-dimensional regular diffusions, and we consider a general convex running cost function. The optimization problem is set as a three-dimensional degenerate singular stochastic control problem. We provide the optimal control as the solution of a Skorohod reflection problem at a suitable free-boundary surface. Such boundary arises from the analysis of a family of two-dimensional parameter-dependent optimal stopping problems and it is characterized in terms of the family of unique continuous solutions to parameter-dependent nonlinear integral equations of Fredholm type.