## DEPARTMENT OF MATHEMATICS COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

## Minerva Lectures Fall 2011

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"Model Risk: Modeling, Analysis, Control and Numerics"

The objective of these lessons is to show that model risk analysis, particularly financial model risk analysis, opens new interesting stochastic analysis problems, to present recent mathematical and numerical techniques to tackle them, and to analyze mathematically some robust strategies which, issued from the technical analysis, do not rely on a specific mathematical model. We will also present a selection of challenging open questions.

Various theories will be used, such as statistics of random processes, stochastic control, Malliavin calculus, backward stochastic differential equations, viscosity solutions of nonlinear Partial Differential equations. However the course will be self-contained and, whenever possible, the proofs will be fully detailed.



