1035-60-535 **Rama CONT*** (Rama.Cont@columbia.edu), Columbia University, New York, NY , and **Andreea MINCA** (andreea.minca@polytechnique.org), Ecole Polytechnique, France.
Calibration of portfolio credit risk models: solution of an inverse problem via intensity control. Preliminary report.

Pricing models for portfolio credit derivatives such as CDOs involves the construction of a stochastic process for the losses due to defaults which is compatible with a set of observations of market spreads for CDO tranches. We propose an efficient and stable algorithm to solve this inverse problem by transforming it into a stochastic control probem. We formalize the problem in terms of minimization of relative entropy with respect to a prior jump process under calibration constraints and use convex duality techniques to solve the problem. The dual problem is shown to be an intensity control problem. We show that the corresponding nonlinear Hamilton Jacobi system of differential equations can be represented in terms of a nonlinear transform of a linear system of ODEs and thus easily solved. Our method allows to construct a Markovian jump process for defaults which leads to CDO tranche spreads consistent with the observations. We illustrate our method ITRAXX index data: our results reveal strong evidence for the dependence of loss transitions rates on the past number of defaults, thus offering quantitative evidence for "contagion effects" in the risk-neutral loss process. (Received September 10, 2007)