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Pontryagin principle for deterministic control of random semilinear parabolic equations with almost sure state constraints

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We study a class of optimal control problems governed by random semilinear parabolic equations with almost sure state constraints in the space of continuous functions. We obtain necessary conditions of optimality in the form of a maximum principle with two multipliers, one for the state constraint and one for the cost function, the multiplier for the state constraint takes values in a space of measures. We prove the nontriviality of the multipliers when the state constraint set has nonempty interior. Under a calmness condition, the multiplier for the cost function can be suppressed.

Orateur: Dr VISCONTI, Piero (INSA-Rouen)

Classification de Session: Chance-constrained programming