Sharp solvability for singular SDEs

Damir Kinzebulatov [1]

The attracting inverse-square drift provides a prototypical counterexample to solvability of singular SDEs: if the coefficient of the drift is larger than a certain critical value, then no weak solution exists. We prove a positive result on solvability of singular SDEs where this critical value is attained from below (up to strict inequality) for the entire class of form-bounded drifts. This class contains e.g. the inverse-square drift, the critical Ladyzhenskaya-Prodi-Serrin class. The proof is based on a L^p variant of De Giorgi's method. Joint with Yu.A. Semënov

arXiv:2110.11232

[1]Université Laval, Canada, Québec Email: damir.kinzebulatov@mat.ulaval.ca