Penalisation techniques for one-dimensional reflected rough differential equations

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In this talk, I will show how to solve real-valued rough differential equations reflected on a rough boundary using penalization. The solution Y is constructed as the limit of a sequence $(Y^n)_{n\in\mathbb{N}}$ of solutions to RDEs with unbounded drifts $(\psi_n)_{n\in\mathbb{N}}$, where the penalisation ψ_n increases with n. Along the way, we thus also provide an existence theorem and a Doss-Sussmann representation for RDEs with a drift growing at most linearly. A speed of convergence of the sequence of penalised paths to the reflected solution is obtained.
Finally we will discuss how to use the penalisation method to show that for some Gaussian RDEs reflected on the horizontal line, the restriction to $(0,\infty)$ of the law at time $t > 0$ of the solution is absolutely contiuous with respect to the Lebesgue measure.