On the heat equation with a moving singular potential

Eiji Yanagida (The University of Tokyo)

We consider the heat equation with a time-dependent Hardy-type singular potential. In the subcritical case, it is shown that there exists a positive solution if the motion of the singularity is not so quick (at least, 1/2-Hölder continuous). On the other hand, when the singular point moves quickly like a fractional Brownian motion with the Hurst index smaller than 1/2, it can be shown that a positive solution exists for a wider range of parameters. We consider also the positivity of solutions in the case of a negative potential. This talk is based on a joint project with Profs. J.-L. Chern, G. Hwang, I. Okada and J. Takahashi.