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**Title:** Rejuvenation and memory in spin glass: when simulations meet experiments

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**Abstract:** Driven by the synergy between the experimental group of Ray Orbach (Texas) and the Janus collaboration, we were able to solve a twenty-year problem concerning the magnetic response of a spin glass system in finite dimension.

First, we have learned how to quantitatively extract the spin-glass coherence length (i.e. the size of the glassy domains) from simulations of non-equilibrium spin-glass dynamics. Second, thanks to the advent of the dedicated super-computer Janus II (numerical side) and of the single crystal of CuMn (experimental one), we have fulfilled the time-scale and length-scale gap between experiments and numerical simulations, so we have finally been allowed to compare them. Third, Janus II has provided a crucial understanding of how temperature chaos in non-equilibrium dynamics works. These milestones have allowed us to set up a successful simulation of memory and rejuvenation.

In this talk, I will describe our recent success in reproducing in a simulation the spectacular memory and rejuvenation effects of spin glasses, reviewing the crucial ingredients that have brought us to this point.

**Keywords:** magnetism, complex system, spin glass, Janus II

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