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Progress and hurdles in the statistical mechanics of deep learning

Understanding the great performances of deep neural networks is a very active direction of research with contributions coming from a wide variety of fields. The statistical mechanics of learning is a theoretical framework dating back to the 80s which relies on the teacher-student scenario, bayesian analysis and mean-field approximations. In this talk, I will present ongoing work towards applying this framework to deep learning and emphasize important challenges. This is a joint work with Jean Barbier, Florent Krazkala and Lenka Zdeborova.