

## Variational inequalities and random data

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Variational inequalities were first introduced as a general framework for several problems in Analysis. Over the years it became clear that they generalize several important problems, including standard optimization, saddle point and complementarity problems, and Nash equilibria. In this talk we study how one can solve a monotone variational inequality when the corresponding variational operator is only available through random samples. We obtain optimal convergence and finite sample results under very weak assumptions on the data-generating mechanism. Our analysis relies on some techniques that are new in this context, including martingale and empirical process techniques.