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Title: Epidemics on Graphs under Uncertainty

Epidemic processes can model anything that spreads. As such, they are a useful tool for studying not only human diseases, but also network attacks, spikes in the brain, the propagation of real or fake news, the spread of viral tweets, and other processes. This talk focuses on epidemics spreading on an underlying graph. Currently, most state-of-the-art research in this field assumes some form of perfect observation of the epidemic process. This is an unrealistic assumption for many real-life applications, as the recent COVID-19 pandemic tragically demonstrated: data is scarce, delayed, and/or imprecise for human epidemics, and symptoms may appear in a non-deterministic fashion - if they appear at all. We show in this work not only that the algorithms developed previously are not robust to adding noise into the observation, but that some theoretical results cannot be adapted to this setting. In other words, uncertainty fundamentally changes how we must approach epidemics on graphs.