1154-60-364   **Danny Nam*** (`dhnam@princeton.edu`), Department of Mathematics, Princeton University, Princeton, NJ 08544, and **Shankar Bhamidi**, **Oanh Nguyen** and **Allan Sly**. *The contact process on random graphs.*

The contact process describes an elementary epidemic model, where each infected vertex gets healed at rate 1 while it passes its disease to each of its neighbors independently at rate λ. On the infinite d-regular tree with the initial infection at its root, [Pemantle '92] proved that the process has three different phases depending on λ: extinction, weak survival, and strong survival. In this talk, we show that the phase diagram of the contact process on a Galton-Watson tree depends on the tail of the offspring distribution in the following sense: the extinction-survival threshold is strictly positive if and only if the tail has an exponential decay. In such cases, we further achieve the first-order asymptotics for the location of the threshold. We will also discuss analogous results for Erdős-Rényi and other random graphs. Joint work with Shankar Bhamidi, Oanh Nguyen and Allan Sly. (Received September 02, 2019)