1112-62-116 **Alessandro Rinaldo*** (arinaldo@cmu.edu), Department of Statistics - 132 Baker Hall, Carnegie Mellon University, Pittsburgh, PA 15213. *Random Networks, Graphical Models, and Exchangeability.*

We describe several connections between exchangeable random networks and graphical models. We show that exchangeable finite networks extendable to larger networks can be approximated by mixtures of curved exponential families. In turn, these models correspond to a distinguished class of graphical models of marginal independence for binary data. We further consider extendability to infinite exchangeable networks. We obtain a simple derivation of de-Finetti theorem for exchangeable arrays, and we link it to the theory of graphons. Unlike previous results, our analysis yields a canonical parametric model for finite exchangeable arrays. Using this characterization, we discuss the challenges and intrinsic difficulties of fitting exchangeable network models. Joint work with Steffen Lauritzen and Kayvan Sadeghi. (Received July 25, 2015)