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Apoorva Khare* (khare@stanford.edu), Departments of Mathematics and Statistics, Stanford University, 390 Serra Mall, Stanford, CA 94305, and **Bala Rajaratnam** (brajarat@stanford.edu). *A novel approach to analyzing graphons.*

Limits of dense graph sequences, also called graphons, have recently been the subject of enormous attention because of their applications to large networks, their evolution, and analysis. In particular, Lovasz and his collaborators (Borgs, Chayes, and so on), Diaconis, Tao, Varadhan, and their coauthors have published many insightful papers on the subject, which discuss graph limits, subgraph sampling, testable parameters, and so on. We present the results of ongoing work, in which we have been able to significantly extend many of the most important results involving the space of graphons, their limiting properties, and characterization of various classes of functions. We then demonstrate how our methods can be applied to other settings involving graphs. (Received September 25, 2012)