Spectra in ensembles of regular graphs

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We consider ensembles of different regular graphs with size distributed in a certain known way. We find the eigenvalue density of such ensembles by analyzing spectra of their adjacency matrices and Laplacian matrices. Such subgraphs as path graphs, full binary and m-ary trees, star-trees are discussed.

The motivation is related to study of macromolecular solutions. It is known that sparse macromolecular clusters can be described by tree ensembles [1].

References

[1] F. Farstenberg, M. Dolgushev, A. Blumen, Analytical model for the dynamics of semiflexible dendritic polymers. *The Journal of chemical physics* **136** (2012) 154904.