

Dielectric top membranes in plane-wave backgrounds

We investigate the large- N limit of the BMN matrix model by means of classical bosonic membranes that have spherical topology and spin inside the 11-dimensional maximally supersymmetric plane-wave background. First, we classify all possible $M2$ -brane configurations based on the distribution of their components inside the $SO(3) \times SO(6)$ symmetric plane-wave spacetime. We then formulate some simple but very representative ansatz of dielectric tops that rotate in this space. We examine the radial and angular/multipole stability for a wide range of these configurations, locating their regions of stability and instability. We also demonstrate a "cascade" phenomenon for the membrane instabilities by extending the analysis of fluctuations to higher orders of perturbation theory

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