Perturbative dynamics of fuzzy spheres at large N

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3d bosonic Yang-Mills-Chern-Simons(YMCS) model:

$$S = N\mathrm{tr}\left(-\frac{1}{4}[A_\mu, A_\nu]^2 + \frac{2i\alpha}{3}\epsilon_{\mu\nu\rho}A_\mu A_\nu A_\rho\right).$$

Toy model incorporating fuzzy sphere classical solution:

$$A_\mu = \alpha L_\mu, \text{ where } L_\mu = (N \times N \text{ rep. of SU(2)}).$$

We scrutinize the dynamics of the fuzzy sphere for the multi-loop perturbation.

- **"One-loop dominance" holds for the** *effective action* Γ.
- **"One-loop dominance" does not hold for the** *generic observables*.