Open Challenge: The XYSTEM Axiom

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Problem. Prove or refute:

$$\forall \Delta \ \exists R, C > 0 : \ \operatorname{tr}((\Delta^{(1)}_{X_R(G)})^\dagger) \leq C$$

for all finite vertex-transitive G with $\deg(G) \leq \Delta$.

Equivalently:

$$\lambda_1(\operatorname{Lk}_R(v)) \geq \varepsilon > 0 \quad \forall v.$$

Status: Open (Conditional). Repository: https://github.com/inaciovasquez2020/urf-axioms