PROJECT PROPOSAL

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My first topic is on a cute geometric formulation called an orbitope. Specifically, an orbitope is "the convex hull of a compact group acting linearly on a vector space". I have two papers on oritopes attached. The paper "orbitopes" appears to be a more introductory paper to oritopes, but I would hope to build towards the paper "coadjoint orbitopes", which extends the idea into compact Lie groups. It seems all the literature on "orbitopes" is fairly new, which hopefully means more accessible.

A second topic would focus on the attached paper "Group Invariant Scattering". This paper concerns the "scattering" transformation on the $L^2(\mathbb{R}^d)$ space, but this paper seems to extend the idea to $L^2(G)$ for a compact Lie group G. My goal would be to get to section 5 of this paper — the section on this generalization to compact Lie groups.

Note: I believe all attached articles are published, but I could not get access to the official published version of "Orbitopes", so I have attached the arXiv version.