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Dihedral long root local A-packets of G_2 via theta correspondence

Let G be a split exceptional group of type G_2. Arthur's Conjecture describes the constituents of the square integrable automorphic representations of G. It decomposes this space as a direct sum of subspaces consisting of near equivalence classes of representations. These subspaces, called A-packets, are indexed by certain morphisms called A-parameters.

We will focus on the so-called dihedral long root A-parameters of G. We will explain that they factor through A-parameters for $\mathrm{PU}_3 \rtimes \mathbb{Z}/2\mathbb{Z}$. Motivated by this, we will use the exceptional theta correspondence between $\mathrm{PU}_3 \rtimes \mathbb{Z}/2\mathbb{Z}$ and G to propose a construction of the local representations of G that appear in the corresponding A-packets. This is joint work with Raúl Alonso, Qiao He, and Mishty Ray and is part of a larger project (involving other authors) that aims to prove Arthur's Conjecture for this type of A-parameters.