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The Resonances of the Capelli Operators for Small Split Orthosymplectic Dual Pairs

Let (G, G) be a reductive dual pair in $\mathrm{Sp}(\mathsf{W})$ with $\mathrm{rank}\,G \leq \mathrm{rank}\,G$ and G' semisimple. The image of the Casimir element of the universal enveloping algebra of G' under the Weil representation ω is a Capelli operator. It is a hermitian operator acting on the smooth vectors of the representation space of ω. We compute the resonances of a natural multiple of a translation of this operator for small split orthosymplectic dual pairs. The corresponding resonance representations turn out to be GG-modules in Howe's correspondence. We determine them explicitly.

Keywords: Resonances, Capelli operators, Howe's correspondence.

MSC: 43A85, 58J50, 22E30.