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

Let \((G, G)\) be a reductive dual pair in \(\text{Sp}(W)\) with \(\text{rank } G \leq \text{rank } G'\) semisimple. The image of the Casimir element of the universal enveloping algebra of \(G'\) under the Weil representation \(\omega\) is a Capelli operator. It is a hermitian operator acting on the smooth vectors of the representation space of \(\omega\). 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.