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Arveson-Douglas conjecture and Toeplitz operators

We show that if V is a homogeneous submanifold of $\mathbb{C}^n \setminus \{0\}$ and \mathcal{M} the subspace in the Drury-Arveson space of all functions that vanish on V , then the commutators $[S_j, S_k^*]$, where S_j is the compression to \mathcal{M} of the multiplication by the coordinate function z_j , $j = 1, \dots, n$, belong to the Schatten p -class for all $p > \dim_{\mathbb{C}} V$. This settles the “geometric” version (in the terminology of Kennedy and Shalit) of the well-known Arveson-Douglas conjecture, for the case of smooth submanifolds and scalar-valued functions. The result also holds for the Hardy and weighted Bergman spaces. Our main tool is the theory of Toeplitz operators with pseudodifferential symbols due to Boutet de Monvel and Guillemin.

[Joint work with Jörg Eschmeier, Saarbrücken.]