

From Shi Arrangements to Reflection Multi-Arrangements

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The module of derivations of a multi-arrangements of hyperplanes was introduced by Ziegler in the 1980's. Maybe the most important example is the Coxeter arrangement with constant multiplicities resolved by Terao in 2002 by showing that these are free with exponents given uniformly in terms of Coxeter numbers and invariant degrees. For finite Weyl groups, this result is closely related to the combinatorics of Catalan and Shi arrangements.

After a detailed description of this relationship, I plan to present a generalization to all complex reflection group, using the most general notion of Coxeter numbers and an operator on irreducible components introduced by Malle in the context of the associated cyclotomic Hecke algebra, opening a possible way to generalize certain notions of Catalan and Shi arrangements beyond Weyl types.

This is joint work with Torsten Hoge, Toshiyuki Mano and Gerhard Roehrl.

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