1106-13-2646 **Aaron N Brookner*** (brookner@mit.edu), 58 Manchester Rd., Brookline, MA 02446, and **David Corwin**, **Steven V Sam** and **Pavel Etingof**. *On the Cohen-Macaulayness of S_n-Invariant Subspace Arrangements.*

If we let $\lambda = (\lambda_1, \ldots, \lambda_r)$ be a partition of an integer n, we can define a certain subspace E_λ of $\mathbb{C}^n$. We then consider $X_\lambda = S_n \cdot E_\lambda$, the union of S_n-translates of E_λ, which is an algebraic variety. This talk is concerned with addressing the question: for which λ are X_λ or X_λ/S_n Cohen-Macaulay?

While we still lack a complete answer to this question, using representation theory of Cherednik algebras, standard commutative algebra, and computations in the Macaulay2 programming language, we have reached many partial results, including a definite "no" in the case that λ has at least four distinct parts. We also formulate a number of conjectures, and give evidence for a more general claim that X_λ is rarely ever Cohen-Macaulay, and when it is, there is some additional structure behind it coming from representation theory and integrable systems. (Received September 16, 2014)