1113-46-201 **Remus Nicoara*** (`nicoara@math.utk.edu`), 227 Ayres Hall, 1403 Circle Drive, Knoxville, TN 37996-1320. *Deformations of group-type commuting squares and Hadamard matrices.*

Let G be a finite group and denote by $\mathfrak{C}_G$ the commuting square associated to G. We introduce the defect $d(G)$ of the group G, as an upper bound for the number of linearly independent directions in which $\mathfrak{C}_G$ can be continuously deformed in the class of commuting squares. We show that this bound is actually attained, by constructing $d(G)$ analytic families of commuting squares containing $\mathfrak{C}_G$.

When $G = \mathbb{Z}_n$, $d(\mathbb{Z}_n)$ can be interpreted as the dimension of an enveloping tangent space of the real algebraic manifold of $n \times n$ complex Hadamard matrices, at the Fourier matrix F_n. We obtain $d(\mathbb{Z}_n)$ families of complex Hadamard matrices containing the Fourier matrix F_n, and of linearly independent directions of convergence. We then use analytic tools to prove a non-equivalence result for some of these matrices. Part of this presentation is based on joint work with Joseph White. (Received August 21, 2015)