The reciprocal character of the conjugation action

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Abstract. For a finite group G, we investigate the smallest positive integer $e(G)$ such that the map sending $g \in G$ to $e(G)|G : C_G(g)|$ is a generalized character of G. It turns out that $e(G)$ is strongly influenced by local data, but behaves irregularly for non-abelian simple groups. We interpret $e(G)$ as an elementary divisor of a certain non-negative integral matrix related to the character table of G. Our methods applied to Brauer characters also answer a recent question of Navarro: The p-Brauer character table of G determines $|G|_{p'}$.

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