Title: Finite groups with many values in a column or a row of the character table

Author(s): Mariagrazia Bianchi, David Chillag and Anna Gillio

Many results show how restrictions on the values of the irreducible characters on the identity element (that is, the degrees of the irreducible characters) of a finite group $G$, influence the structure of $G$. In the current article we study groups with restrictions on the values of a nonidentity rational element of the group. More specifically, we show that $S_3$ is the only nonabelian finite group that contains a rational element $g$ such that $\chi_1(g) \neq \chi_2(g)$ for all distinct $\chi_1, \chi_2 \in \text{Irr}(G)$. We comment that the dual statement is also true: $S_3$ is the only finite nonabelian group that has a rational irreducible character that takes different values on different conjugacy classes.

Address:
Mariagrazia Bianchi
Dipartimento di Matematica “F. Enriques”
Università Degli Studi Di Milano
Via C. Saldini 50, Milano
Italy
E-mail: Mariagrazia.Bianchi@mat.unimi.it

Address:
David Chillag
Department of Mathematics
Technion, Israel Institute of Technology
Haifa 32000
Israel
E-mail: chillag@techunix.technion.ac.il

Address:
Anna Gillio
Dipartimento di Matematica “F. Enriques”
Università Degli Studi Di Milano
Via C. Saldini 50, Milano
Italy
E-mail: Anna.Gillio@mat.unimi.it