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M R Darafsheh* (darafsheh@ut.ac.ir), School of Mathematics, University of Tehran, 14174 Tehran, Iran. *One rational irreducible characters of finite groups*. Preliminary report.

Let χ be a complex irreducible character of a group G . The field generated by all $\chi(x)$, $x \in G$, is denoted by $\mathbb{Q}(\chi)$. The character χ is rational if $\mathbb{Q}(\chi) = \mathbb{Q}$. A group G is called a rational group or a \mathbb{Q} -group if all irreducible complex characters of G are rational. The order and structure of \mathbb{Q} -groups are restricted, for example by a result of Feit and Seitz the simple \mathbb{Q} -groups are among the Wyle groups of the simple Lie algebras and their extensions, while by a result of Gow the order of a solvable \mathbb{Q} -group is divisible by numbers 2, 3, or 5. Despite these facts the complete structure of a \mathbb{Q} -group of order a power of 2 is not completely known. In this talk we survey recent results on classifying \mathbb{Q} -groups. (Received September 06, 2018)