

The structure of finite groups with restrictions on the set of conjugacy classes.

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Consider a finite group G . For $g \in G$, denote by g^G the conjugacy class of G containing g , and by $|g^G|$ the size of g^G . Put $N(G)$ is the set of conjugacy class sizes of G .

For a long time, groups which set of conjugacy class size can be represented as a product of two sets were studied. Let's formulate the following question.

Question 1. *Let G be a group such that $N(G) = \Omega \times \Delta$. Which Δ and Ω guarantee that $G \simeq A \times B$, where A and B are subgroups such that $N(A) = \Omega$ and $N(B) = \Delta$?*

In this talk, I will try to give a partial answer to this question.