عنوان مقاله:
Restrictions on sets of conjugacy class sizes in arithmetic progressions

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خلاصه مقاله:
We continue the investigation, that began in [M. Bianchi, A. Gillio and P. P. Pálfy, A note on finite groups in which the conjugacy class sizes form an arithmetic progression, Ischia group theory ۲۰۱۰, World Sci. Publ., Hackensack, NJ (۲۰۱۲) ۲۰--۲۵.] and [M. Bianchi, S. P. Glasby and Cheryl E. Praeger, Conjugacy class sizes in arithmetic progression, J. Group Theory, ۲۳ no. ۶ (۲۰۲۰) ۱۰۳۹--۱۰۵۶.], into finite groups whose set of nontrivial conjugacy class sizes form an arithmetic progression. Let G be a finite group and denote the set of conjugacy class sizes of G by {\rm cs}(G). Finite groups satisfying {\rm cs}(G) = \{۱, ۲, ۴, ۶\} and \{۱, ۲, ۴, ۶, ۸\} are classified in [M. Bianchi, S. P. Glasby and Cheryl E. Praeger, Conjugacy class sizes in arithmetic progression, J. Group Theory, ۲۳ no. ۶ (۲۰۲۰) ۱۰۳۹--۱۰۵۶.] and [M. Bianchi, A. Gillio and P. P. Pálfy, A note on finite groups in which the conjugacy class sizes form an arithmetic progression, Ischia group theory ۲۰۱۰, World Sci. Publ., Hackensack, NJ (۲۰۱۲) ۲۰--۲۵.], respectively, we demonstrate these examples are rather special by proving the following. There exists a finite group G such that {\rm cs}(G) = \{۱, ۲^{\alpha}, ۲^{\alpha+۱}, ۲^{\alpha}۳ \} if and only if \alpha =۱. Furthermore, there exists a finite group G such that {\rm cs}(G) = \{۱, ۲^{\alpha}, ۲^{\alpha +۱}, ۲^{\alpha}۳, ۲^{\alpha +۲}\} and \alpha is odd if and only if \alpha=۱.

کلمات کلیدی:
Conjugacy classes, finite soluble groups, arithmetic progressions