

Products of Finite Groups

M.R.DARAFSHEH

School of Mathematics, Statistics and Computer Science
University of Tehran, Iran
E-mail: darafsheh@ut.ac.ir

Let G be a finite group and A, B proper subgroups of G . If $G = AB$, then we say that G is a factorizable group and A, B are called factors of this factorization. In this case G is also called the products of two proper subgroups A and B . The problem of which finite groups are factorizable is still an open problem.

In the book, products of groups, authored by F. De Giovanni, et al. [1], page 13, the authors raise the the question to describe all groups that have a proper factorization. Although this question is still an open problem, but by imposing some conditions on factors we are able to find factorization of a group G . This condition may be to assume that one factor is a simple group or alternating or a symmetric group, etc. In particular one can see the references [2], [3] and [4]. In this talk we survey results on factorizations of finite groups.

References

- [1] B. Amberg, S. Fransiosi and F. De Giovanni, *Products of groups*, Oxford University Press (1992).
- [2] M. R. Darafsheh, *Finite groups which factor as products of an alternating group and a symmetric group*, *Comm. Alg.* **32** (2004) 637–647.
- [3] M. R. Darafsheh, G. R. Rezaeezadeh and G. Walls, *Groups which are the product of S_6 and a simple group*, *Alg. Colloq.* **10** (2003) 195–204.
- [4] O. Kegel and H. Lüneberg, *Über die kleine reidemeister bedingungen*, *Arch. Math. (Basel)*, **14** (1963), 7–10.