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Section:

2. Algebra

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Strunkov S. P., Moscow State Engineering Physics Institute

On p-blocks of minimal defect in a finite group and Gelfand pairs

We study connections between some questions in the representation theory of finite groups and in the theory of equations on groups. Some necessary and sufficient conditions of existing of p-blocks of defect 0 in a finite groups and the number of such blocks were obtained in terms of commutator equations ([1]). In this report
1) the number of irreducible complex characters of minimal p-defect in a finite group G is expressed in terms of equations

$$u_1^{x_1} \dots u_n x_n = 1, \quad x_i \in G, u_i \in G_p, i = 1, \dots, n;$$

2) the number real absolutely irreducible characters of minimal p-defect in a finite group G is expressed in terms of some different equations on G;
3) necessary and sufficient conditions of existing of Gelfand pairs (G, H) in a finite group G are obtained in terms of some equations on G.
Reference: 1. S. P. Strunkov, On equations in finite groups, London Math. Soc. , Lect. Notes, 212, pp. 543-548.