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INVESTIGATIONS IN NONABELIAN DIFFERENCE SETS OF ORDER 25

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Abstract of Talk: Historically the study of difference sets has been restricted to abelian groups and it has been proven that no abelian $(352, 27, 2)$, $(204, 29, 4)$, $(112, 37, 12)$, or $(105, 40, 15)$ difference sets exist. By using representation theory and algebraic number theory, we prove that there are no nonabelian difference sets in groups of order 352, 204, 112, and 105.