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On Kottwitz’s Conjecture for Twisted Involutions

Motivated by problems on nilpotent orbital integrals for real Lie groups, Kottwitz (2000) formulated a conjecture concerning the relationship between Kazhdan-Lusztig cells of a finite Coxeter group W and its conjugacy classes of \diamond -twisted involutions, where \diamond is an involutory graph automorphism of W . In this paper, we study this relationship in type D_n and all cases where \diamond is non-trivial. Combined with work of Kottwitz himself, Casselmann, Marberg, and joint work of Bonnafé, Halls and the author, this completes the proof of Kottwitz’s Conjecture for all W, \diamond .

Keywords: Coxeter groups, twisted involutions, Kazhdan-Lusztig cells.

MSC: 20F55; 20G40, 22E50