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**Hossein Andikfar\*** ([andikfar@math.uic.edu](mailto:andikfar@math.uic.edu)), 422 west Melrose st., # 602, Chicago, IL 60657.

*Decomposition numbers of finite groups of Lie type of small rank in the defining characteristic.*

We investigate the decomposition numbers and Cartan invariants of some finite groups of Lie type of ranks 1 and 2, for  $p = 2$ . These groups include  $SL(2, 2^n)$ ,  $SL(3, 2^n)$ ,  $SU(3, 2^n)$ ,  $Sp(4, 2^n)$ , and the Suzuki group  $Suz(2^{2n+1})$ . A direct comparison between the ordinary characters and 2-modular Brauer characters of these groups can be very tedious. Instead we focus on the decomposition of their principal indecomposable characters into ordinary characters. By using some recursive formulas for PIM's of these groups due to Feit and Chastkofsky, and Deligne-Lusztig classification of the ordinary characters of finite groups of Lie type, we find combinatorial descriptions for some of the decomposition numbers and Cartan invariants in terms of some specific graphs attached to these groups. (Received September 28, 2005)