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Burnside normal complement theorem

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Let  $G$  be a finite group, and  $S$  a Sylow subgroup such that  $C_G(S) = N_G(S)$ . Then  $S$  has a normal complement. That is, there exists a normal subgroup  $N \triangleleft G$  such that  $S \cap N = \{1\}$  and  $SN = G$ .