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PBW and canonical bases of modules for Lie algebras and quantum groups

Let V be an irreducible representation of a finite-dimensional complex semi-simple Lie algebra. Then $V = U^-v$ where U^- is the universal enveloping algebra of the minus part of the Lie algebra. We want to find an explicit subset S of a PBW basis of U^- such that a basis of V is given by all sv , where s varies in S . In the quantized case, we show that such a subset S can be given using Lusztig's canonical and PBW bases of U_q^- . In type A , S can be explicitly given in terms of Young tableaux, similar to the bases of Carter-Lusztig in 1974. We have results for types B, C, and D, using Kashiwara's crystal bases, and the Young tableaux of types B, C, and D of Kashiwara-Nakashima.