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Role of $d^{n-1}s$ configurations in hyperfine structure (hfs) of d^n levels in transition metal atoms and ions: Application to V II[1] DONALD BECK, MARWA ABDALMONEAM, Michigan Technological University — Independent particle calculation of the hfs of d^n levels in transition metal atoms can lead to serious errors when there are nearby $d^{n-1}s$ levels. These errors can only be corrected when the latter levels are properly mixed into the d^n wave-functions along with, e.g. the usual hfs single excitations [1]. Recently hfs of 25 V II levels has been measured [2] and there is substantial disagreement with 4 of 8 previously measured hfs [3]. Preliminary RCI calculations [4] support the newer work [2].

[1] D.R. Beck, Phys.Rev. A45,1399 (1992).
[2] N.M.R. Armstrong et al, Phys.Scr.84,055301 (2011).
[3] K. Arvidsson, M.S. thesis, Lund Observatory (2003).
[4] M. Abdalmoneam and D.R. Beck, manuscript in preparation.

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