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**Narrowing Overhauser field by coherent population trapping** ZHAN-FENG JIANG, REN-BAO LIU JIANG, Department of Physics, The Chinese University of Hong Kong, Shatin, New Territories, Hong Kong, China — By optical coupling to an excited state, an electron spin may be trapped to a coherent dark state when the Overhauser field has a proper value. At the same time, the fluctuation of nuclear spins is suppressed. Although the electron may jump out of the dark state due to the Fermi-contact hyperfine interaction between the electron and the nuclei, it still has a predominant probability to stay at the dark state. The narrowing of the Overhauser field prolongs the coherent time of the electron spin. The Overhauser field is always suppressed as the external magnetic field varies in a large range. A window with a long coherent time forms when we scan the external magnetic field. This work is supported by Hong Kong RGC/GRF Project CUHK402209 and NSFC/RGC Joint Project N\_CUHK403/11.

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