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A METHOD OF GENERATING INTENSE NUCLEAR POLARIZED BEAMS BY
SELECTIVE PHOTODETACHMENT OF NEGATIVE IONS*

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ABSTRACT

A novel method for production of nuclear polarized negative hydrogen ions by selective neutralization with a laser of negative hydrogen ions in a magnetic field is described. This selectivity is possible since a final state of the neutralized atom, and hence the neutralization energy, depends on its nuclear polarization. The main advantages of this scheme are the availability of multi-ampere negative ion sources and the possibility of neutralizing negative ions with very high efficiency. An assessment of the required laser power indicates that this method is in principle feasible with today's technology.

A detailed paper on the method presented has been published in:
Nuclear Instruments and Methods in Physics Research A 243 (1986) 271.

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