

Dynamic nuclear polarisation: From polarised targets in hadron physics to medical imaging

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Since 1960s nuclear polarised targets have been an essential tools for study of spin structure of nucleons. The solid state polarised targets make use of the Dynamic Nuclear Polarisation (DNP). Spin physics observables strongly depend on the degree of nuclear polarisation. This is similar issue for the Nuclear Magnetic Resonance (NMR) and NMR Imaging, where the sensitivity also strongly depends on the degree of nuclear polarisation. Additionally one of special NMR techniques, the radiation detected NMR (RD-NMR), also requires high degree of polarisation. The RD-NMR has been predominantly performed using beams of radioactive nuclei polarised. With the widespread availability of isotopes for medical use, DNP could allow for use of RD-NMR outside of beam facilities.

In this contribution we will illustrate the rich history of polarised targets and present the current project for the first ever use of DNP for polarisation of unstable nuclei to be used for potential medical applications.

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