

Focussing of protons in crystals and nuclear reactions

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Well collimated beam of Mev protons is incident on thin film of a crystal. Within the crystal the protons propagate along the crystalline canals. In the harmonic approximation for the transversal potential all the protons (with different impact parameters) are focussed at the same point on the canal axis. If an atomic nucleus is placed in the focus the probability of nuclear reactions is greatly enhanced (by a factor of several hundreds). Possible manifestations and applications of this effect are discussed.