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Channeling Effect in Polycrystalline Deuterium-Saturated CVD Diamond Target Bombarded by Deuterium Ion Beam

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At the ion accelerator HELIS [1-4] at the LPI, the neutron yield is investigated in DD reactions within a polycrystalline deuterium-saturated CVD diamond, during an irradiation of its surface by a deuterium ion beam with the energy less than 30 keV. The measurements of the neutron flux in the beam direction are performed in dependence on the target angle, β , with respect to the beam axis. These measurements are performed using a multichannel detector based on He3 counters. A significant anisotropy in neutron yield is observed, it was higher by a factor of 3 at $\beta=0$ compared to that at $\beta = \pm 45$. The possible reasons for the anisotropy, including ion channeling, are discussed.

References

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