عنوان مقاله:

Fusion of Hydrogen Boron (H–11B): Clean nuclear energy without radioactivity

محل انتشار:

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خلاصه مقاله:

After years of research on fusion energy, a new opportunity is now emerging to use fusion energy while avoiding any radioactive radiation. This remarkable approach is made possible by using laser pulses of petawatt (PW) power and picosecond (ps) duration to burn hydrogen boron (H–11B) fusion fuels. This fuel uses plentiful light hydrogen (H) and the boron isotope 11, which yields energetic charged particles without generating neutrons. An alternative laser fusion scheme of side-on ignition with uncompressed fuel is proposed to enable ignition of the H–11B fuel along with PW laser interactions. This approach employs a recently discovered laser-plasma interactiontechnique that uses very high contrast ratio laser pulses (i.e. pulses nearly free from pre-pulses). This new ignition process is termed side-on block ignition , and it is described here in some detail.

کلمات کلیدی:

clean fusion energy, hydrogen boron-11 fuel, without radioactivity, ignition process, side-on block ignition