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Ionic Debye Screening in Dense Liquid Plasmas Observed for Li+p, d Reactions with Liquid Li Target

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摘要 Thick target yields of α particles emitted in the ${}^6\text{Li}(d, \alpha){}^4\text{He}$ and ${}^7\text{Li}(p, \alpha){}^4\text{He}$ reactions were measured for Li target in the solid and liquid phase. Observed reaction rates for the liquid Li are always larger than those for the solid. This suggests that the stopping power of hydrogen ion in the liquid Li metal might be smaller than in the solid. Using the empirically obtained stopping power for the liquid Li, we have deduced the screening potentials of the Li+p and Li+d reactions in both phases. The deduced screening potential for the liquid Li is about 500 eV larger than for the solid. This difference is attributed to the effect of liquefied Li+ ions. It is concluded that the ionic screening is much stronger than the electronic screening in a low temperature dense plasmas.

关键词 [low energy nuclear reaction](#) [Li+p and Li+d reaction in liquid Li](#) [liquid metal Li screening energy](#).

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