

THE INTERACTION OF U+U AND U+Pb AT 9.997 MeV/AMU

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Using a makrofol detector, we studied the reactions U+U and U+Pb at 9.997 MeV/AMU in 2π geometry.

The thickness of the targets, prepared by evaporation on sheets of makrofol, were varied between 1000-5000 $\mu\text{g}/\text{cm}^2$. The irradiations were performed at the GSI-Darmstadt UNILAC, with a U flux of $\sim 10^6$ ions/ cm^2 , incident perpendicularly upon the surfaces of the targets.

After the chemical treatment, the following types of events were found. (a) Binary events, i.e., two correlated tracks corresponding to elastic scattering, direct interactions of heavy nuclei and to binary fission of U induced by the C,O nuclei in makrofol. (b) Three-, four-, five- and more-prong events, which resulted from direct interactions of heavy nuclei.

We have determined the geometrical characteristics of binary and ternary events and the cross sections for events resulting from direct interactions of heavy ions (Table 1).

TABLE 1

Reactions	σ_3 (mb)	σ_4 (mb)	σ_5 (mb)	σ_{3+4+5} (mb)	$\sigma_{\text{theor.}}$
U+U	1549 \pm 156	1204 \pm 121	/	2753 \pm 278	3384
U+Pb	1519 \pm 153	673 \pm 67	37 \pm 3.7	2229 \pm 224	3374

As we can see from Table 1, the experimental cross sections are smaller than the theoretical cross sections, because we have not taken into account binary events resulting from direct interactions of heavy ions.

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