

INVESTIGATIONS OF ELASTIC SCATTERING
OF THE METASTABLE HELIUM ATOMS
BY THE SODIUM ATOMS USING OPTICAL
POTENTIAL MODEL

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The results of the pure quantum-mechanical calculation in the optical potential approach of integral cross sections in the wide collision energy region for the elastic scattering of singlet and triplet excited metastable helium atoms $\text{He}(2^{1,3}S)$ by sodium atoms $\text{Na}(3^2S)$ are presented. Low-energy (at the energies below 10 meV) structure of elastic cross sections was obtained. As an example, using the partial phase shifts and cross sections for the maxima 1 meV (for singlet case) and 0.4 meV (for triplet case) energies, the analysis of their origin is made. The comparison of the calculated Penning-ionization cross sections with the experimental and quasi-classical data is presented.