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Scattering lengths and low-energy cross sections for Na-He collisions<sup>1</sup> CHIH-YUAN LIN, PHILLIP C. STANCIL, Department of Physics and Astronomy and Center for Simulational Physics, The University of Gerogia, Athens, GA 30602, H.-PETER LIEBERMANN, PETER FUNKE, ROBERT J. BUENKER, Fachbereich C - Mathematik und Naturwissenschaften, Bergische Universität Wuppertal, D-42097 Wuppertal, Germany — With the *ab initio* adiabatic potentials and nonadiabatic radial and rotational couplings obtained from multireference singleand double-excitation configuration interaction approach, we carried out scattering calculations by the quantum- mechanical molecular-orbital close-coupling method. The low- energy collisions of elastic and inelastic processes have been investigated. Scattering lengths as a function of the reduced mass and collision energy are obtained and their relation to bound states are illustrated. Elastic and inelastic cross sections for energies between 0.1 neV and 10 eV are also presented.

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