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Muon transfer from muonic hydrogen to atomic oxygen and nitrogen¹ ANH-THU LE, CHII-DONG LIN, Department of Physics, Kansas State University — The results of the diabatic hyperspherical close-coupling calculations are presented for the transfer of negative muon from muonic hydrogen to oxygen and nitrogen for collision energies from 1 meV to 1 keV. It is shown that converged results can be obtained using a much smaller number of channels than in the traditional adiabatic approach. For the energy range below 10 eV our results for nitrogen are in good agreement with the available experimental data and the recent calculations within hyperspherical elliptic coordinates. However, discrepancies were found in the case of oxygen, where a p-wave shape resonance is shown to contribute significantly to the cross sections. We show that for oxygen the p-wave resonance extends to a large volume and is sensitive to the many-body effect. Calculations including outer screening of the oxygen atom have been performed to illustrate the importance of such effect.

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