

Abstract Submitted
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Double-photoionization of CO few eV above threshold¹ A. BELKACEM, T. OSIPOV, M. HERTLEIN, M. PRIOR, H. ADANIYA, B. FEINBERG, Lawrence Berkeley National Laboratory, TH. WEBER, T. JAHNKE, R. DORNER, L. SCHMIDT, M. SCHOFFLER, O. JAGUTZKI, University of Frankfurt, C.L. COCKE, Kansas State University, A. LANDERS, U. of Auburn, LBNL TEAM, U. FRANKFURT TEAM, KSU TEAM, U. OF AUBURN TEAM — We measured double photoionization of CO molecules at 48 eV photon energy. The double ionization of CO produces mostly $C^+ + O^+$ fragments with non-measurable amounts of CO^{2+} . The formation of $C^+ + O^+$ can proceed through two possible channels: a) Direct ionization of two electrons into the continuum – similar to the H₂ double ionization – direct channel. b) Ionization of one electron into the continuum followed by autoionization of a second electron – Indirect channel. The electron distribution measured with a COLTRIMS shows a very clear distinction of the direct and indirect channels. The kinetic energy release spectrum shows a series of peaks corresponding to the transient vibrational states of the various electronic states of $(CO^{2+})^*$. These states are similar to previous measurements at higher energies (K-shell photoionization). $(CO^{2+})^*$ is found to predissociate through a $^3\Sigma^-$ and $^1\Delta$ dissociative states leading to considerably faster dissociation times than natural lifetimes of the electronic bound states.

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