Strong Field Ionization of Ne$^{+}$($n<3$) for an Ultrafast, 400 nm Laser Field

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University of Delaware — Total ionization yields are reported for neon (Ne$^+$ to Ne$^{3+}$) at intensities from $10^{14}$ W/cm$^2$ to $10^{17}$ W/cm$^2$ for a 400 nm laser field. Sequential ionization processes are modeled by tunneling ionization and shown to be accurate within a factor of two near saturation for Ne$^+$ and Ne$^{2+}$. Non-sequential multi-electron ionization is observed for the ionization yield of Ne$^{2+}$ and Ne$^{3+}$. The ratio of ion yields from 800 nm and 400 nm laser fields for neon charge states for Ne$^{2+}$ and Ne$^{3+}$ show non-sequential ionization for a 400 nm laser field is different when compared to that for an 800 nm laser field. A semi-classical, 3D relativistic rescattering model is compared to the data.

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