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Frustrated tunnel ionization of argon by intense few-cycle infrared laser radiation.[1] THOMAS PAULY, NOAH SMITH, KLAUS BARTSCHAT, Drake University, NICOLAS DOUGUET, University of Central Florida — We report calculations for strong-field ionization and excitation of argon by directly solving the time-dependent Schrö dinger equation in a single-active electron model. In particular, we are interested in the process of "frustrated tunnel ionization", where a field-ionized electron is driven back towards the nucleus by the changing laser field and ultimately gets recaptured into an excited bound state without the possibility of escaping again due to the fact that the few-cycle pulse has already weakened too much. This process is currently being investigated experimentally at Griffith University [1] and also theoretically, using a semi-classical model, at Illinois Wesleyan University [2]. We discuss the effect of different potentials and carrier-envelope phases, as well as the laser intensity and the ellipticity of the radiation, on the theoretical predictions. Where possible, we compare our results with experimental data and other theoretical results. [1] R.T. Sang (2019), private communication. [2] B.A. deHarak (2019), private communication.

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