

Abstract Submitted  
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**Importance of cusps in TDDFT**<sup>1</sup> ZENGHUI YANG, KIERON BURKE, University of California, Irvine — Density cusp is the most prominent feature of Coulombic systems, as the Coulombic potential is dominantly strong at these points. In our recent paper[J. Chem. Phys. 131, 114308(2009)], we discussed how the nuclear cusp determines the asymptotic form of the oscillator strength of ground-state Kohn-Sham systems, and here we apply the analysis to time-dependent systems. By studying 1d model systems with turn-on perturbations both with linear response theory and propagating in real time, we find the density cusp in space generates singularity in time. We discuss the implications of these t-singularities on TDDFT.

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