

Supplementary Information

Multi-octave supercontinuum generation from mid-infrared filamentation in a bulk crystal

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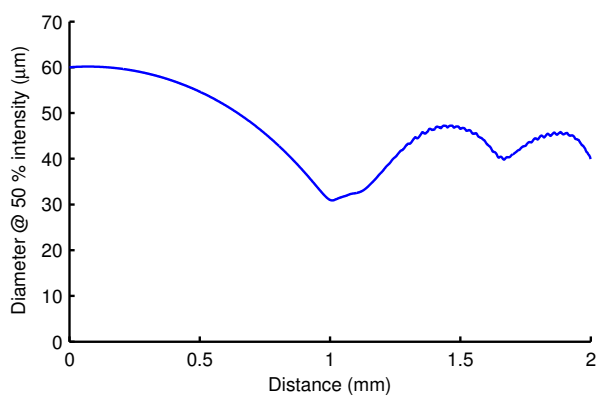
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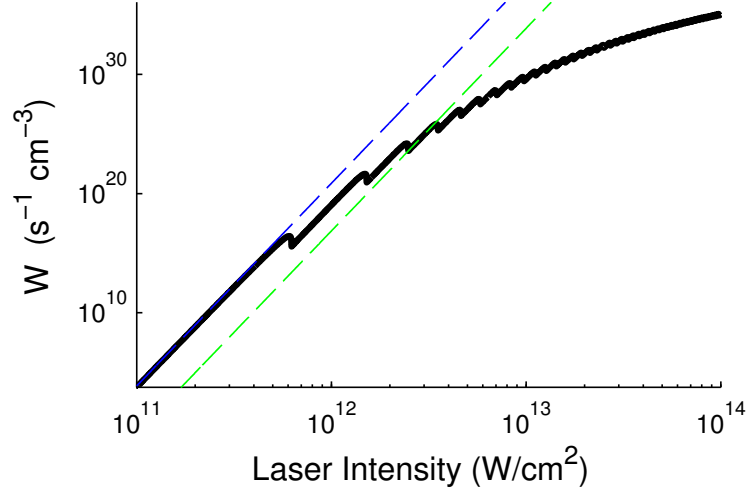
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Supplementary Figures



Supplementary Figure S1: *Simulated beam diameter*. Simulated beam diameter at 50% intensity limit as function of propagation distance in the YAG plate.



Supplementary Figure S2: *Optical field ionization rate for YAG used in numerical calculations.* Optical field ionization rate for YAG calculated from the Keldysh formulation for a central wavelength of $3.1\ \mu\text{m}$. The blue dashed lines indicate the low-intensity asymptote describing multiphoton ionization $W_{MPI} = \sigma_K I^K \rho_{nt}$ where $K = 17$, $\sigma_{17} = 1 \times 10^{-206} \text{s}^{-1} \text{cm}^{34} \text{W}^{-17}$ and $\rho_{nt} = 7 \times 10^{22} \text{cm}^{-3}$. The green dashed line shows an example of MPI rates (cross section coefficient $\sigma_{17} = 1 \times 10^{-210} \text{s}^{-1} \text{cm}^{34} \text{W}^{-17}$) for which the Fish tail at $550\ \text{nm}$ clearly appears in numerically simulated angular spectra.