

Ionization-free Filamentation in Gases

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The observation of plasma-free filamentation leads to challenge the role of plasma in laser filamentation. Up to now, no other process challenging plasma as the main defocusing process balancing the Ker self-focusing. We suggest here new mechanism of filamentation on base of THz oscillation of the nonlinear refractive index in the femtosecond region. This oscillation is due to including of the offset frequency in the model. The equation obtained admits 3D+1 soliton solution.

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