# Annotation

The work discusses spatial interaction effects between several filaments in stochastic and regularized multifilamentation regimes in air as well as single filament spectral features. The analysis is based on the measurements of radiation frequency-angular spectrum (FAS) and spatial mode of a filament.

A filament was formed by radiation of a Ti:Sa laser system delivering pulses with 55 fs duration and 2–10 mJ energy at 10 Hz repetition rate with 7 mm FWHM beam diameter. The filament was generated in air under additional focusing by 3 m lens. Frequency-angular spectra were measured using an imaging spectrometer accepted radiation at the end of a filament path reflected from silica wedge. Regular filament structure was produced by amplitude and phase masks placed into the beam before the lens.

The work studies angular structure of a radiation spectrum in a single filament. In particular, it discusses features of conical emission, separated IR Stokes spectral component, four-wave mixing, etc. Based on anti-Stokes component angle the electron density of plasma is estimated. The result was $3.2 \cdot 10^{17}\,\mathrm{cm}^{-3}$.

For both stochastic and regularized multiple filaments the existence of single on-axis component was firstly revealed. Its central wavelength varies from 840 to 900 nm. In the case of filament with regular structure on-axis radiation is observed in whole spectral range. All these components could be interpreted in terms of fusion of several filaments and superfilament formation.