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Emission on prohibited transitions in acoustoplasma environment

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In laboratory nitrogen acoustoplasma at pressures from several hundred to several thousand Pa, strong emission lines of molecular nitrogen were obtained at forbidden transitions at 654.81 and 658.36 nm. Strong emission lines were observed both in pure nitrogen acoustoplasma and in a CO₂:N₂:He = 1:1:8 laser mixture. In the laser mixture, the emission at the forbidden transition was up to 17 times greater than the adjacent spectral lines of the nitrogen FPS band. The obtained result is explained by the acoustoplasma medium and the analogue of Raman scattering, which remove the prohibition. The obtained intense lines correspond to the mechanism of stimulated emission.

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