

# **Analysis of Subsonic COIL Performance with a Magnetic Modulation**

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1D subsonic COIL model with a mixing length was generalized to include the influence of a variable magnetic field on the stimulated emission cross-section. The results are compared with the measured pulse shape.

The concept of 1D subsonic COIL model with a mixing length was generalized to include the influence of a variable magnetic field on the stimulated emission cross-section. Equations describing the chemical kinetics were solved taking into account together with the gas temperature also a simplified mixing model of oxygen and iodine molecules. A variable magnetic field transforms the CW regime in a pulsed operation. The advantage of the numerical procedure is a possibility to consider an arbitrary temporal dependence of the imposed magnetic field and to calculate directly the response of the laser output. The method was applied to model the experimental data measured with the subsonic version of the COIL device in the Institute of Physics, Prague, where the applied magnetic field had a saw-tooth dependence. Having achieved a reasonable agreement of our model for the CW regime with the measured dependences of the laser output, the purpose of this contribution is to confront the magnetically switched regime with the measured pulse shape.

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