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## 4P78 - Generation and propagation of nitrogen laser pulses of long (< 3 μs) duration in air

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This paper describes three sets of experiments regarding the generation and propagation of nitrogen emission at 337.1 nm. 8 stage PFN (Pules forming network) Marx generator was used in the first set of experiments. The generator of 50  $\Omega$  internal impedance produces a "square" shaped voltage waveform across 50  $\Omega$  resistor. When the generator is applied to the experimental setup, the glow-like discharges containing numerus filamentary (spark) channels were created in air The discharge induces the multiphoton ionization of air molecules, the excitation of the molecules and ions to yield the laser emission. By varying the geometrical arrangement in the setup, the laser pulses of both: long (<3 µs), and of short (~10 ns) duration were generated in air at 337.1 nm (=principal laser line of N2 laser). The laser beams are attenuated as they traverse away from the laser output. The scaling law was derived describing the attenuation of the single capacitor was discharged into 2 mm wide gap to generate the radiation at 337.1 nm in air. The relationship between the current through the discharge and the emission was established. In the third set of experiments, the processes of the photopreionization were further investigated.

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