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**Ionization processes in combined high-voltage nanosecond – laser discharges in inert gas.** ANDREY STARIKOVSKIY, MIKHAIL SHNEIDER, Princeton University, PU TEAM — Remote control of plasmas induced by laser radiation in the atmosphere is one of the challenging issues of free space communication, long-distance energy transmission, remote sensing of the atmosphere, and standoff detection of trace gases and bio-threat species. Sequences of laser pulses, as demonstrated by an extensive earlier work, offer an advantageous tool providing access to the control of air-plasma dynamics and optical interactions. The avalanche ionization induced in a pre-ionized region by infrared laser pulses where investigated. Pre-ionization was created by an ionization wave, initiated by high-voltage nanosecond pulse. Then, behind the front of ionization wave extra avalanche ionization was initiated by the focused infrared laser pulse. The experiment was carried out in argon. It is shown that the gas pre-ionization inhibits the laser spark generation under low pressure conditions.

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