

Abstract Submitted  
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**Faraday and Kerr Effects Diagnostics for Underwater Exploding Wires**<sup>1</sup> G.S. SARKISOV, Raytheon Ktech, USA, A.V. FEDOTOV-GEFEN, YA.E. KRASIK, Technion, Israel — Two-channel laser polarimeter was used to measure magnetic and electric fields in vicinity of underwater exploding wire. Nd:YAG Q-switch laser with 532nm wavelength, 100mJ energy and 5ns pulse width was used for probing. Single wire, parallel wires and X and V- shaped wires was used in experiments. Electric and magnetic field induced birefringes in the water results in changing of polarization stage of probing beam after propagation through this anisotropic medium. Magnetic field results in circular anisotropy of the water, while electric field creates linear anisotropy. Magnetic field results in rotation of polarization plan of linear-polarized probing beam. Electric field effect is more complicated- polarization plan of the laser beam subjected to pulsation and changing of ellipticity. Effect of electric field depends on initial probing geometry- angle between electrical field vector  $E$  and polarization plane of probing wave. In our exploding wire experiments we found influence of both Faraday and Kerr effects. It was demonstrated existence of Kerr effect inside bubbles at high voltage electrode. Effect of magnetic fields interaction for multi-wire loads was observed.

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