Simulation of converging cylindrical GPa-range shock waves generated by wire array underwater electrical explosions

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We present the results of one-dimensional numerical simulations of the parameters of converging strong shock wave, generated by electrical underwater explosions of a cylindrical wire array with varying array radii and deposited energies. It is shown that for each wire array radius there is an optimal duration of energy deposition into the exploding array, which allows one to maximize the shock wave pressure and temperature in the vicinity of the implosion axis. Thus, the dependences obtained allow one to choose the optimal parameters of the cylindrical wire array and pulsed power generator, which allows to achieve maximal pressure and temperature values at the implosion axis. The results of the simulations satisfactorily agree with recent experimental results.