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Particle-in-Cell Simulations of ns-pulse and RF driven microdischarges[1] ALEXANDRE LIKHANSKII, Tech-X Corporation, SERGEY MACHERET, Lockheed Martin Aeronautics Company — Over past decades, microplasma devices (MPDs) became popular research subject for their unique properties and wide range of applications, such as optical emitters, transistors, electron/ion sources, etc. However, MPD integration into electric circuits for consequent transition into industrial applications requires both reduction of MPD sizes and more detailed understanding of the physics behind its operation. In the presentation, we will demonstrate results of kinetic simulation of the state-of-the-art MPD, developed at UIUC and/or at Lockheed Martin, using Tech-X's code VORPAL. We will investigate the dependences of ignition voltage and relevant plasma parameters (such as EEDF, charge carrier density, etc.) during quasi steady-state MPD operation on gas pressure and applied voltage profile.

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