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Axial Ionization Modes in Hall Thruster OLEKSANDR CHAPURIN, IVAN ROMADANOV, ANDREI SMOLYAKOV, University of Saskatchewan, Saskatoon, Canada, YEVGENY RAITSES, Princeton Plasma Physics Laboratory, Princeton, New Jersey, USA, SARAH SADOUNI, GERJAN HAGELAAR, LAPLACE Laboratory, Toulouse, France — The axial instability in thruster channel associated with self consistent fluctuations of the electric field and ionization, commonly known as a breathing mode, and accompanied by strong oscillations of the discharge current, is one of the most violent instability in Hall thrusters. We study the physical mechanisms, criteria for the instability, including the role of boundary conditions, temperature evolution and axial resistive instabilities. The results of the fluid and hybrid simulations are compared and the reasons for the differences are investigated.

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