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Characteristics of short dc glow microdischarges in atmospheric pressure air[1] ANATOLY KUDRYAVTSEV, St. Petersburg State University — The main reason that high pressure current-carrying plasmas tend to be unstable is various instability (primarily thermal) of the positive column (PC). So a promising approach is to use short (without PC) discharges that have growing voltage–current characteristic (VAC). These discharges are ignited near the minimum of the Paschen breakdown curve *Lmin* and it usually have a gap $pL < 10–20$ *cm Torr* when a distinct PC is absent. In this report the most stable microdischarges were burning with a flat cathode and rounded (or thin rod) anode, which located to a distance less than *Lmin* when the microdischarge "choose" their length itself, so that to match the stable work near *Lmin* by changing their binding on the anode. For simulations we used 2D hybrid model. Simulations predicted the main regions of the dc glow discharges including cathode and anode sheath and plasma of negative glow, Faraday dark space and transition region, in which the electric field is distributed no uniformly and plasma is nonlocal. Gas heating plays an important role in shaping the discharge profiles.

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