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Gas multiplication process in high pressure proportional counters

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Systematic measurements of gas amplification factors over the range 1 to $5 \cdot 10^5$, were performed for Ar + 20%CO₂ and Ar + 6.4% CO₂+ 2.5% N₂ mixtures as a function of the applied voltage between cathode and anode for the following working gas pressure: 0.05, 0.1, 0.3, 0.5 and 0.65 MPa. Full current characteristics, starting from recombination mode up to limited proportionality, have been measured.

Single anode (radius of anode $r_a = 10, 15$ and $25 \mu\text{m}$) cylindrical counters (radius of cathode $r_k = 4, 5$ and 6.5 mm) were used for the measurements.

First Townsend coefficients were also determined.

Obtained results will be presented.

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