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Low-noise ionization chambers for synchrotron applications

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A novel, low-noise ionization chamber has been designed and built for monitoring radiation from insertion device and bending magnet sources. The new design incorporates a metalized electrode structure produced by coating a very smooth surface of an insulator with aluminum, which results in a very low background. It is possible to operate the ionization chamber above and below atmospheric pressure in either a gas-flow or a sealed mode. The overall design leads to high sensitivity even at low voltages. A prototype of the ionization chamber was successfully tested on an undulator beamline.

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