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Observation of the behavior of radiation sources with GEM. JAKOB SCANTLIN, Univ of Texas, Arlington — The gas electron multiplier, or GEM, is a device used for amplifying electrons released from ionization of argon gas. The GEM foil is constructed of a polymer clad in a thin layer of copper on either side with small holes chemically etched in a hexagonal matrix pattern. A high voltage is applied across the foil to produce a concentrated electric field between the holes to accelerate the electrons. The gas is placed between the foil and the induction layer, which is where the readout electronics are. Once the electrons are accelerated through the electric field, they ionize more argon gas atoms to release even more electrons (about 100 times more). The purpose of the GEM is to amplify the signals from ionization events so the currents read by the readout electronics can be large enough to accurately measure. An oscilloscope is used to show ionization events of different radiation sources such as Cs-137 or Fe-55.

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