

Test of Quantum Electrodynamics by Electron-Electron Scattering*

We have measured the differential cross section for electron-electron scattering at a total energy of 1112 MeV in the center-of-mass system. Using the Feynman regulator as a model for violation, with K a cutoff momentum, we find $K^{-2} = 0.044 \pm 0.049 \text{ (GeV}/c)^{-2}$. The error quoted represents a statistical contribution of ± 0.042 combined in quadrature with ± 0.025 representing the uncertainty of possible systematic contributions. This result is one of the most sensitive high-momentum-transfer tests of the photon propagator in quantum electrodynamics.

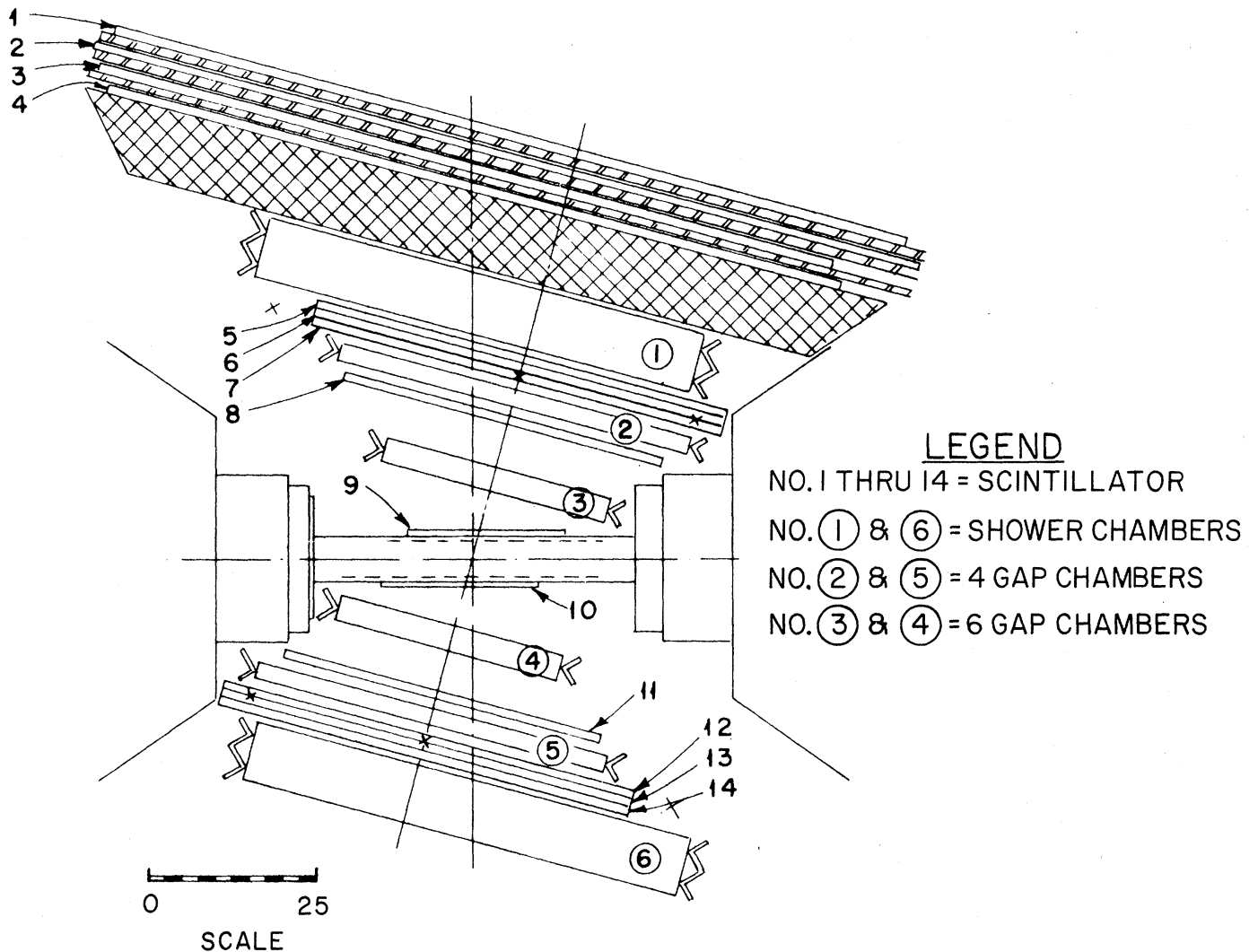


FIG. 1. Storage-ring interaction region and detector system for 556-MeV/electron scattering experiment.

