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Electroproduction of a Scalar (0^{++}) Meson off the Scalar Target¹

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We discuss the electroproduction of a scalar (0^{++}) meson off the scalar target. The most general formulation of the differential cross section for the 0^{++} meson production process involves only two hadronic form factors, respectively, on a scalar target. The Rosenbluth-type separation of the differential cross section provides an explicit relation between the hadronic form factors and the different parts of the differential cross section in a completely model-independent manner. The absence of the beam spin asymmetry for the pseudoscalar meson production provides a benchmark for the experimental data analysis as confirmed in the π^0 electroproduction off the ${}^4\text{He}$ target. Finally, we discuss a simple model calculation for finding the imaginary part of the hadronic amplitude, which can provide insight for measuring the non-vanishing beam spin asymmetry.

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