

Systematic study of the reaction $pp \rightarrow pp\omega$ measured at COSY-TOF

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During the last years, ω meson production in proton-proton collisions ($pp \rightarrow pp\omega$) has been studied at COSY-TOF at four excess energies. Data have been collected starting from $\epsilon = 92$ MeV [1] up to $\epsilon = 173$ MeV. The angular distributions of the ω extracted from these data sets prove the increasing contribution of higher partial waves with increasing excess energy. In addition, the distributions of the Jackson and helicity angles are shown for all excess energies.

One beamtime was conducted with a polarized beam. The extracted analyzing power A_y was found to be zero within uncertainty [2]. This result is somewhat unexpected, since the presence of higher partial waves is obvious.

Finally, the orientation of the decay plane of the ω meson was determined. Since the ω spin is directly linked to the decay plane, this result gives direct access to the spin orientation of the ω , which in return serves as an ideal tool to further pin down the partial wave decomposition of this reaction channel [3].

[1] The COSY-TOF collaboration, Phys. Lett. B **647**, 351 (2007).

[2] The COSY-TOF collaboration, Phys. Lett. B **662**, 14 (2008).

[3] G. Ramachandran *et al.*, J. Phys. G: Nucl. Part. Phys.

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