



Contribution ID: 29

Type: **not specified**

# Breakdown of collinear factorisation in exclusive $\pi^0\gamma$ photoproduction due to Glauber pinch

*Tuesday, 28 May 2024 16:30 (30 minutes)*

In this talk, I will discuss our work in 2311.09146, regarding the breakdown of collinear factorisation in the exclusive photoproduction of a  $\pi^0\gamma$  pair. Such a process is sensitive to both quark and gluon GPD channels. In the latter case, the amplitude fails to factorise, due to the presence of a Glauber pinch, which has the same power counting as the collinear pinch. The Glauber pinch that occurs here is peculiar, since the mechanism that produces it involves two loop integrals. This is corroborated by an explicit calculation of the gluon GPD channel to  $\pi^0\gamma$  pair photoproduction, which leads to a divergent amplitude already at leading twist-2 and at leading order in  $\alpha_s$ . Such collinear factorisation breaking effects also occur in similar processes, such as the crossed channel of  $\pi^0 N \rightarrow \gamma\gamma N$  scattering for the same reason. On the other hand, it should be stressed that for processes where the gluon GPD channel is forbidden, which correspond to the case where the outgoing meson is a charged pion or a rho meson, collinear factorisation works without any issues.

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**Session Classification:** Tuesday