# Di., 7. Oktober

**09:00** → 10:35 **Gravitational Waves and Multi-Messenger**

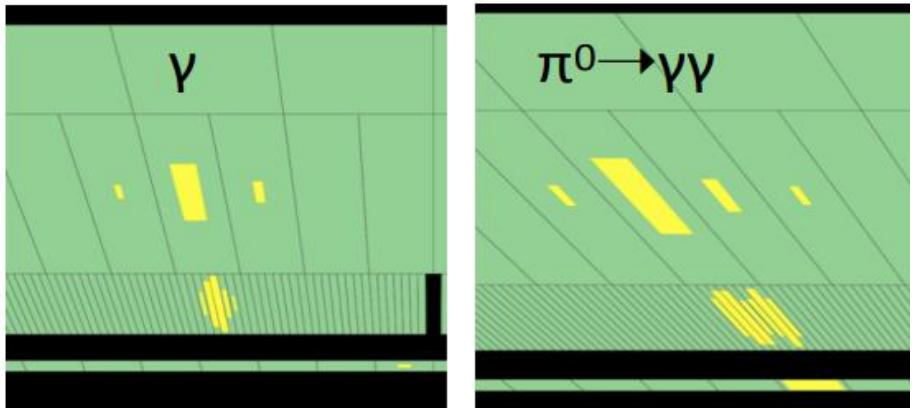
**Vorsitzende der Sitzung**: Cigdem Issever (Z_ET (Teilchenphysik)), Jakob Nordin (Humboldt-Universität zu Berlin)

09:00 **Poster Pitches** 5m

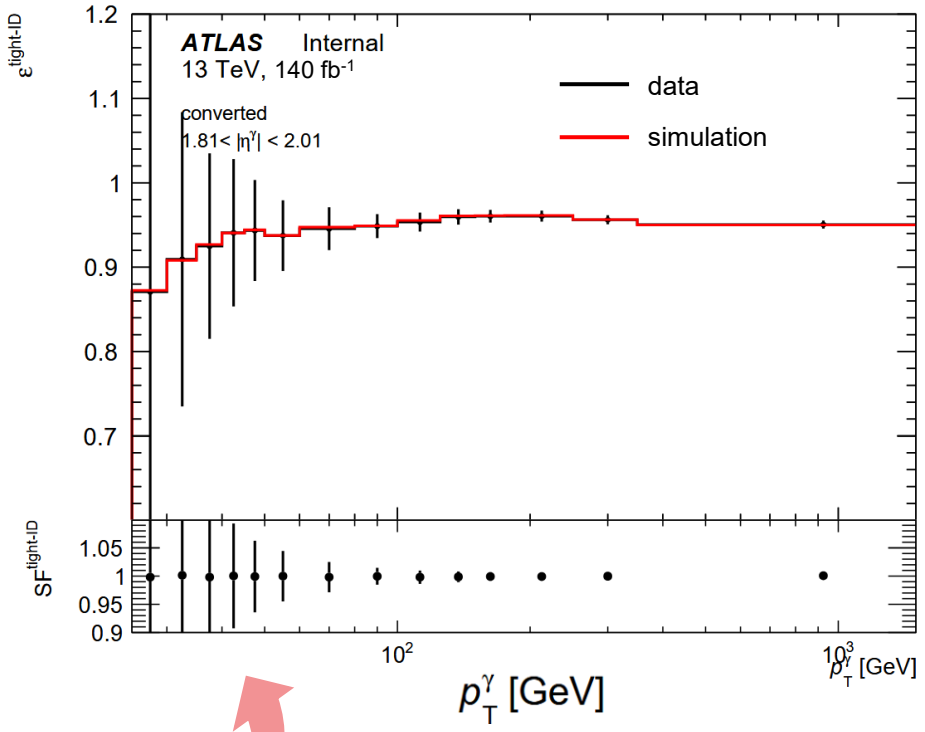
Trigo
Hoogeveen
Stump

# Photon identification efficiency measurement with the matrix method in the ATLAS experiment

Distinguishing photons of interest from fake photons is done through photon identification selections




Efficiency of that selection is measured in order to get scale factors describing data-simulation differences



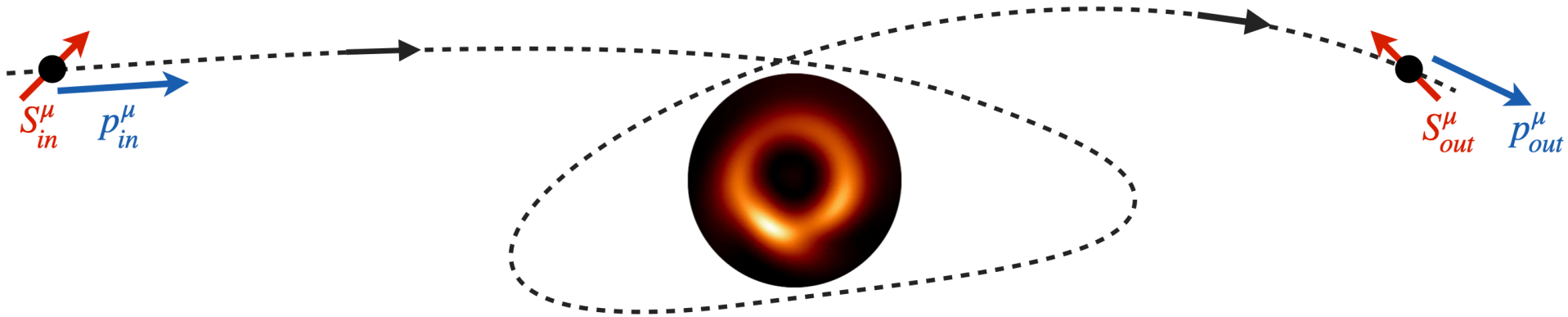

The matrix method is used for a data-driven estimate of that efficiency, giving accurate results across a large photon $p_T$ range

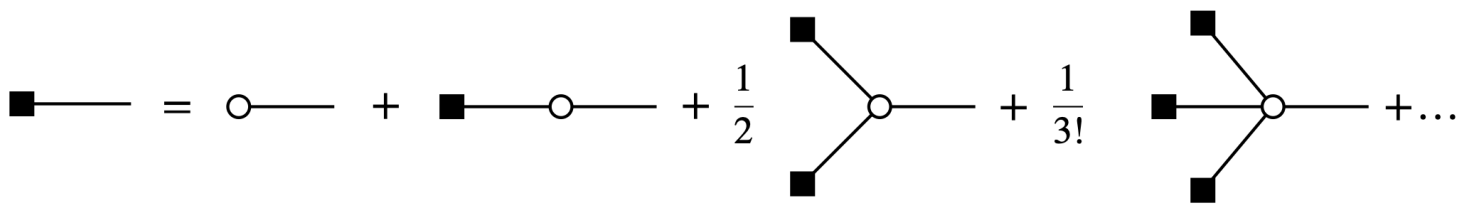
Leonor Santos Pereira Trigo, ATLAS DESY group

# 7PM probe scattering from Worldline Quantum Field Theory

[**Jitze Hoogeveen**, Gustav Uhre Jakobsen, Jan Plefka; 2506.14626]

***Humboldt Universität zu Berlin***



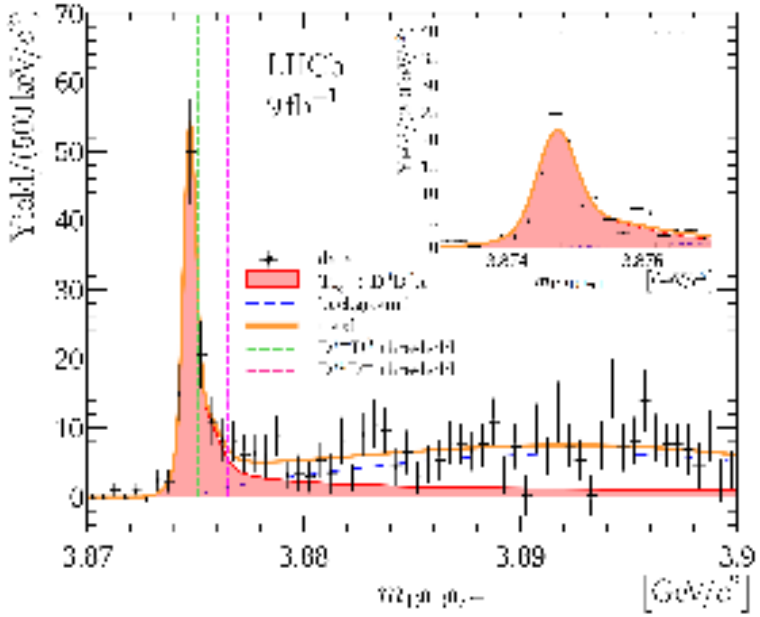




**Integrals: complicated** $\xrightarrow{\text{IBP}}$ **simple**

$\Delta p^\mu$ **and** $\Delta S^\mu$ **up to 7PM** $\mathcal{O}(\lambda^4)$

## Exotic Hadrons

- Various exotic hadrons discovered in last decades
  E.g. $T_{cc}^{+}(3875)$ tetraquark at LHCb
- Want first principle computation of their energies
  $\rightarrow$ Lattice QCD




## Hadron spectroscopy in lattice QCD

- Get energies from two-point functions

$$\langle \mathcal{O}_i(t)\mathcal{O}_j(0)^\dagger \rangle \approx Ae^{-Et} \qquad \text{(large } t\text{)}$$

- Have to combine various operators $\mathcal{O}_i$ (local and bilocal)
  $\rightarrow$ Computationally expensive
  $\rightarrow$ Need new numerical methods