

**Roman Pasechnik**

Lund University

## PROBING THE PROTON STRUCTURE WITH EXCLUSIVE VECTOR MESON PHOTOPRODUCTION

In this seminar, I will provide an extensive overview of the current status of phenomenological research in exclusive and diffractive photoproduction of vector mesons. I will cover the formalism and the key results on photo- and electroproduction observables of both heavy quarkonia states and light vector mesons in the color dipole picture. The key challenges in QCD modelling of such reactions including the basic aspects of low- $x$  QCD dynamics and saturation would be outlined. In particular, I will outline possible implications of these type of reactions for understanding the multi-dimensional proton and nucleus structure at high energies encoded in the so-called Wigner gluon distribution. I will start with a pedagogical introduction into the dipole approach, saturation models and the Wigner distributions connected to the dipole  $S$ -matrix, and then expand into other aspects such as modelling of the vector meson wave functions. Finally, I will elaborate on the current theoretical results and how they match the existing experimental measurements both on the total and differential cross sections.

**When:** Tuesday, November 8, 2022 at 1:30 PM**Where:** Main conference hall, Institute of Physics, Na Slovance 2, Prague 8For more information, please see <https://indico.fzu.cz/event/117/>

This event is supported by ESIF and MEYS  
(Project FZU researchers, technical and administrative staff mobility – CZ.02.2.69/0.0/0.0/18\_053/0016627)

EUROPEAN UNION  
European Structural and Investment Funds  
Operational Programme Research,  
Development and Education