

1 Production of Jets at STAR Experiment

2 Michal Svoboda,
(for the STAR Collaboration)

Nuclear Physics Institute, Czech Academy of Sciences

3 Jets serve as an important tool to probe QCD both in the vacuum and
4 in the hot and dense medium. The STAR experiment at RHIC plays a key
5 role in studying QCD phenomena across different collision systems ($p+p$, $p+A$,
6 $A+A$), offering access to a kinematic regime that complements that of the LHC.
7 Building on recent jet and event activity studies at STAR, we present recent
8 measurements on charged-particle jets at $\sqrt{s_{NN}} = 200$ GeV.

9 In $p+Au$ collisions, we explore event activity (EA) measured in the Au-going
10 direction and its correlation with particle production at mid-rapidity. While soft
11 particle production increases with EA, high- p_T jets are found to be inversely
12 related to EA. Ratios of p_T imbalance and azimuthal dijet separation between
13 high- and low-EA events show no significant differences, suggesting no strong
14 evidence of jet quenching in high-EA $p+Au$ collisions.

15 In Au+Au collisions, we report semi-inclusive measurements of jets recoiling
16 from γ and π^0 triggers, using mixed-event techniques to subtract background
17 and study jet suppression, intra-jet broadening, and acoplanarity. Addition-
18 ally, we present inclusive charged-particle jet spectra corrected for background
19 fluctuations, extending the kinematic reach of previous measurements. These
20 results provide crucial insight into the modification of jets in the medium and
21 contribute to a deeper understanding of QCD in heavy-ion collisions.