

High-Energy Nuclear Physics

Bin Wu



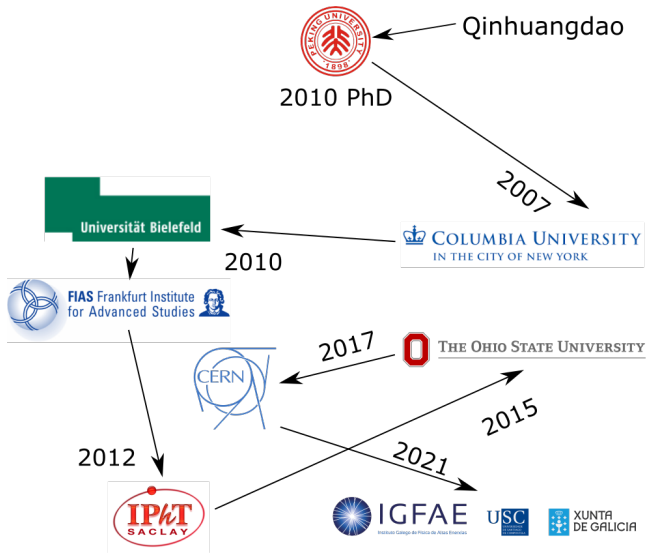
IGFAE
Instituto Galego de Física de Altas Enerxías



**XUNTA
DE GALICIA**

IGFAE Retreat 2020

History: a random walk



Current Position: Investigador Distinguido

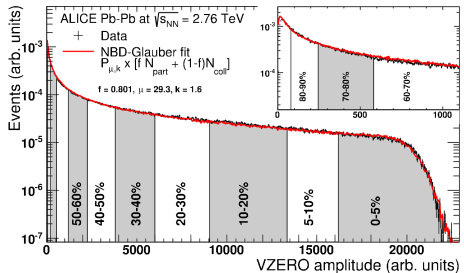
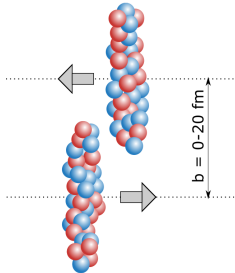


supported by Xunta de Galicia

Main field: high-energy nuclear physics

Features:

1. **Beams:** e, p, Au, Pb, Xe, etc
2. **Collision geometry** \Leftarrow **centrality:**



Introduction to high-energy nuclear physics

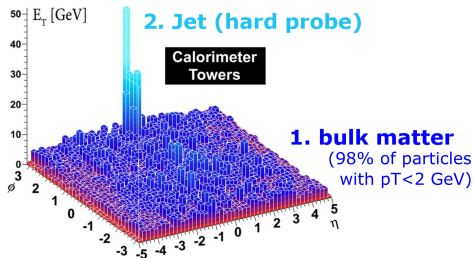
Main topics:

Final-state interactions:

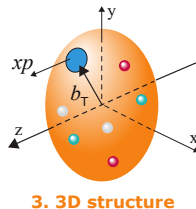


Run Number: 169045, Event Number: 1914004

Date: 2010-11-12 04:11:44 CET



Initial-state substructure:



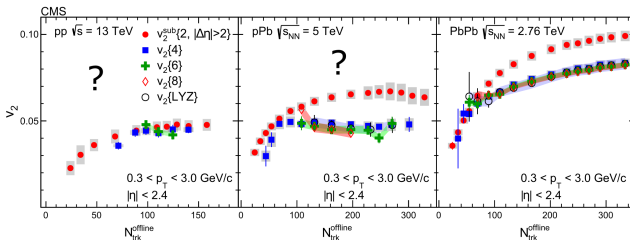
Hadron colliders' focus: **quark-gluon plasma**

EIC's focus: **substructure**

A unified description of pp, pA and AA is needed

Example: the origin of collective flow

$$\frac{dN}{d\phi} = \frac{N}{2\pi} [1 + 2v_2 \cos(2(\phi - \Psi_2)) + \dots]$$



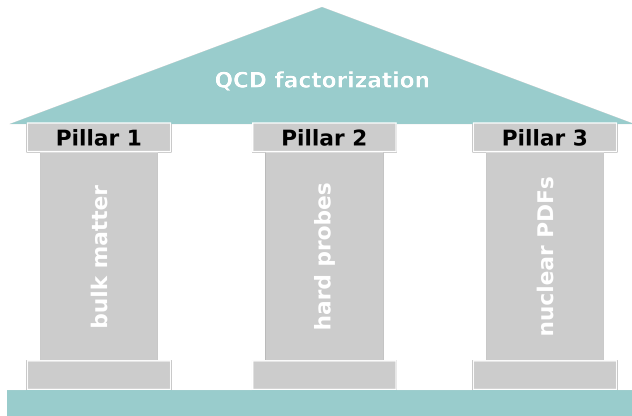
Standard interpretation in AA collisions:

Spatial anisotropies \Rightarrow Momentum anisotropies

a signature for the formation of a fluid droplet of QGP

Does QGP form in pp collisions?

Research goal: a unified framework



for describing pp, pA and AA collisions at the LHC/HL-LHC