Discussion Session - Experiment

Accessing and Understanding the QCD Spectra

INT 20R-2C

Seattle, WA

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Jefferson Lab

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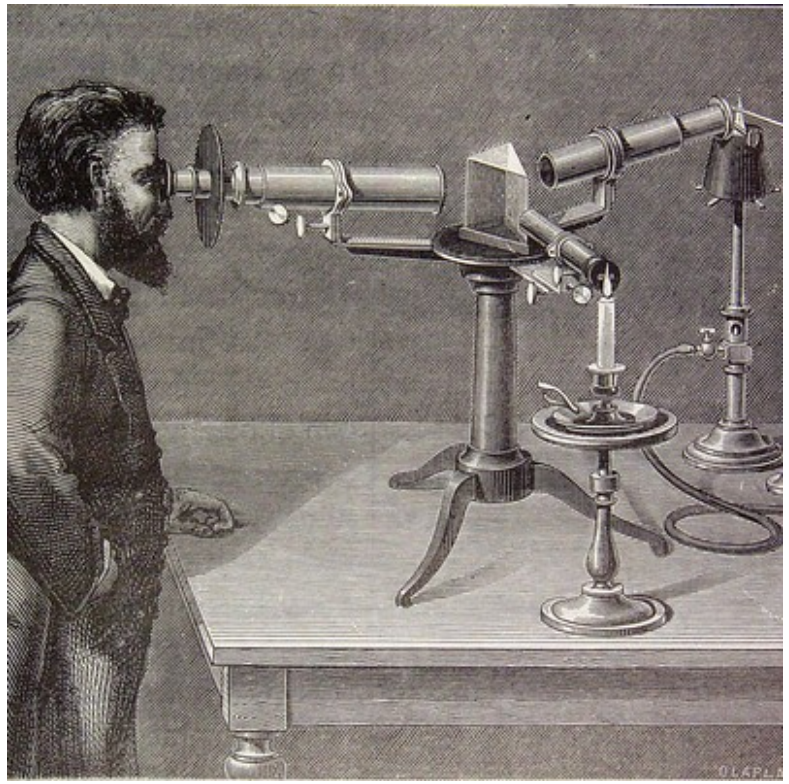
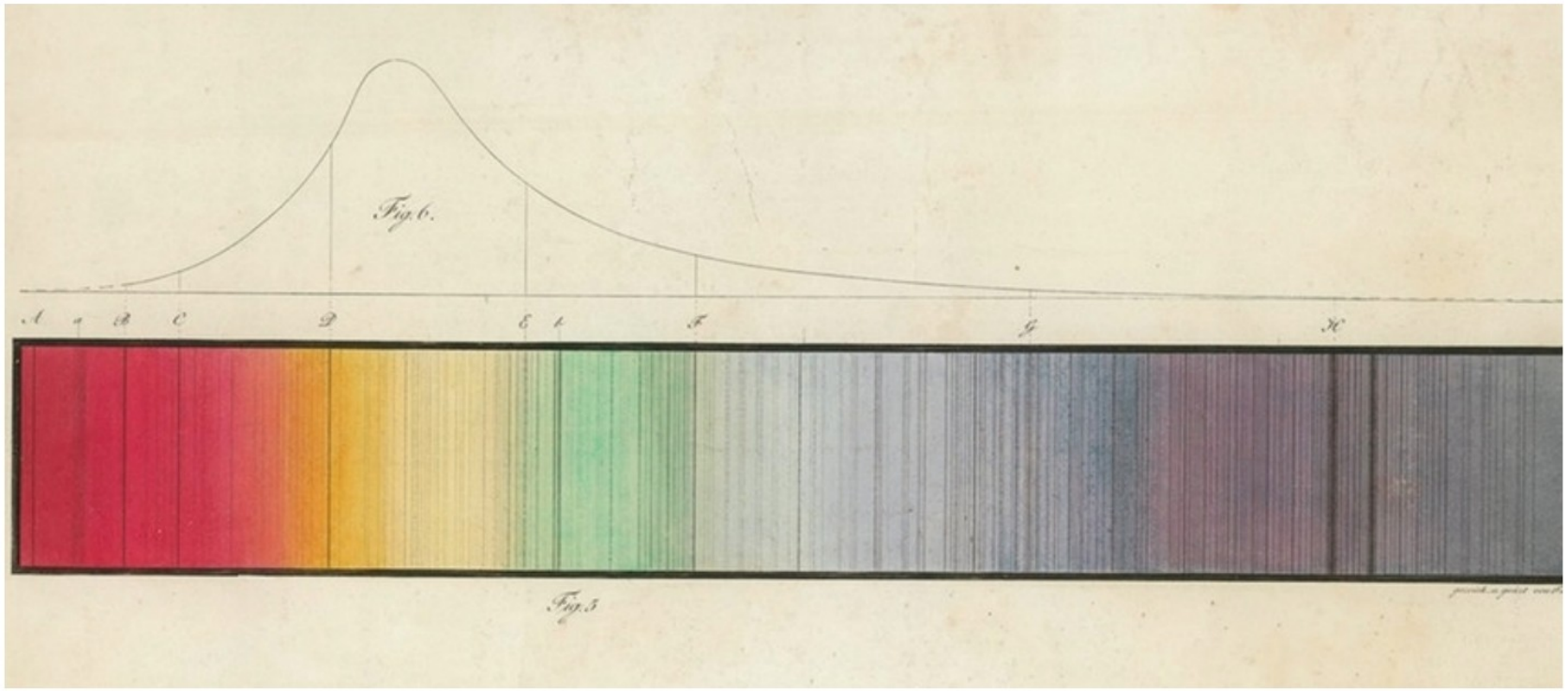
U.S. DEPARTMENT OF ENERGY | Office of Science

JSA

Define Experiment: Measurement





J. v. Fraunhofer, 1814

Define Experiment: Measurement

Raw data (electronic signals)

Reconstructed Data (4-vectors)

Selection of Reaction

Acceptance-corrected Data

Amplitude Analysis

S-Matrix Pole Positions

Model Dependence

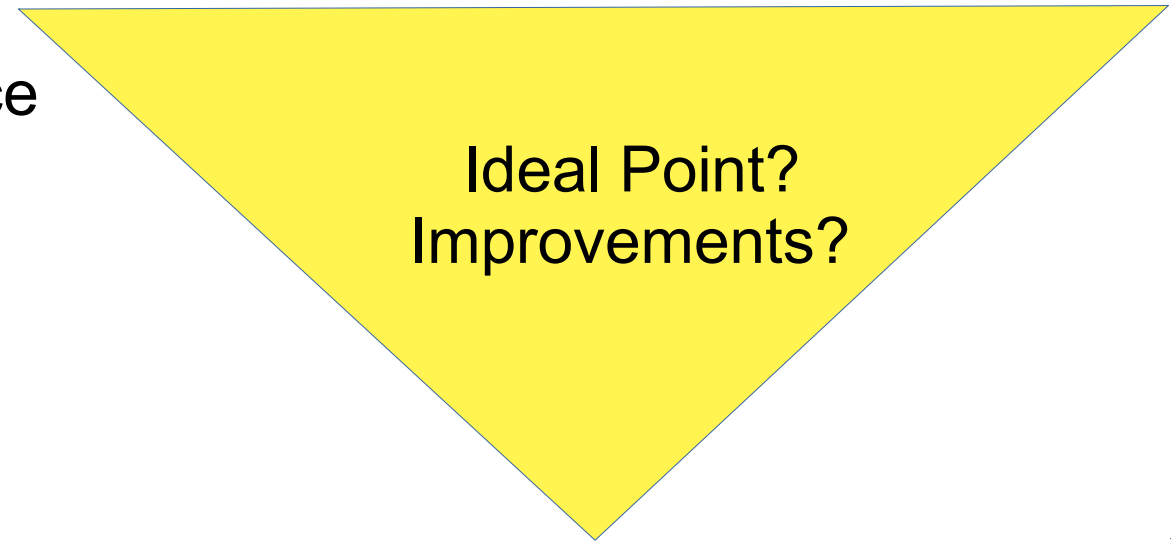
Interaction between Theory and Experiments

Give Theoretician access to low level data

✓ no loss

✗ exp. Acceptance

✗ politics



Experiments apply sophisticated tools, models or amplitudes

✓ correct description

✗ training

✗ model dependence

Phenomenology works with Experiment on Analysis

✓ dialogue

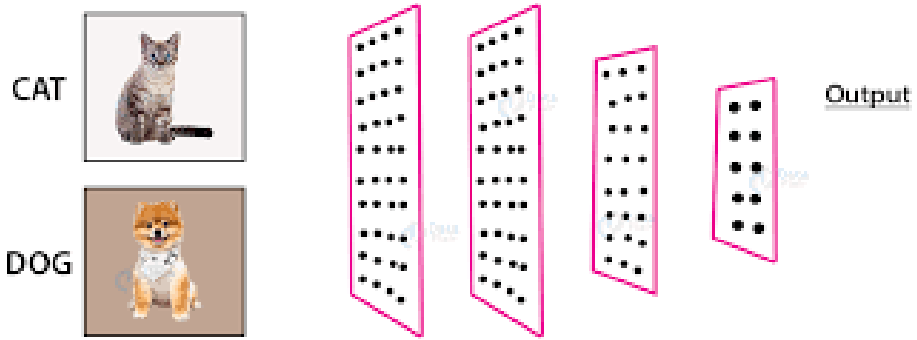
✗ many authors

✗ takes time

What does AI/ML add to experimental spectroscopy analysis?

Hype
Toy

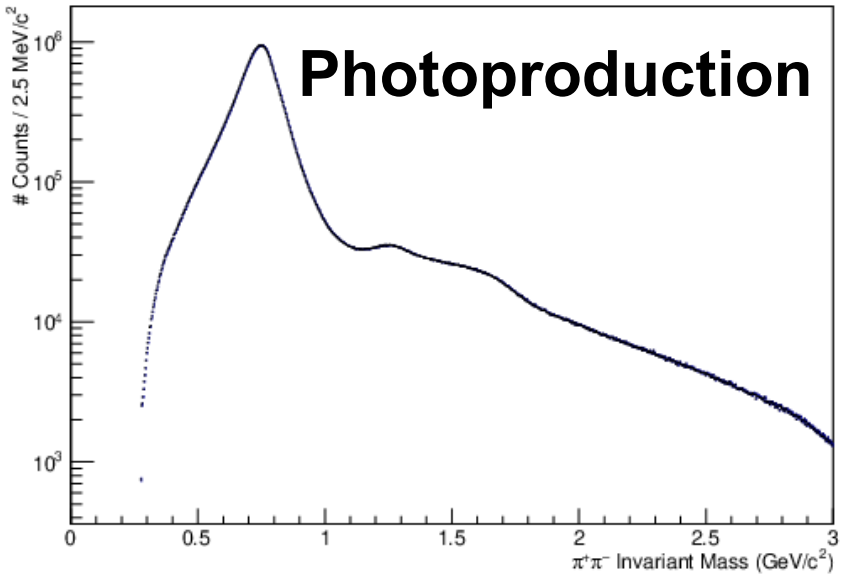
Fundamental Understanding



New ideas:

- information theory to impose continuity between mass bins without model-dependence (NIFTY)
- Deep learning for line shapes (JPAC)
- ...

Complementary Production Mechanisms



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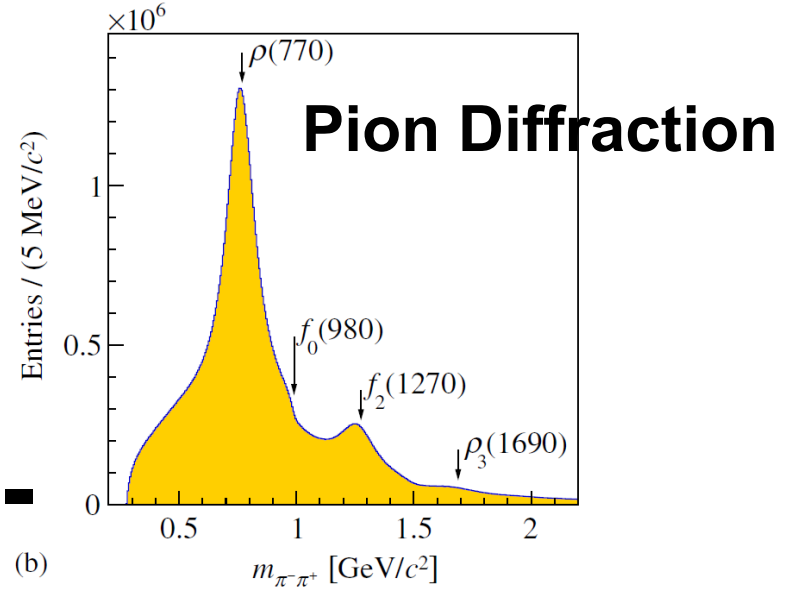

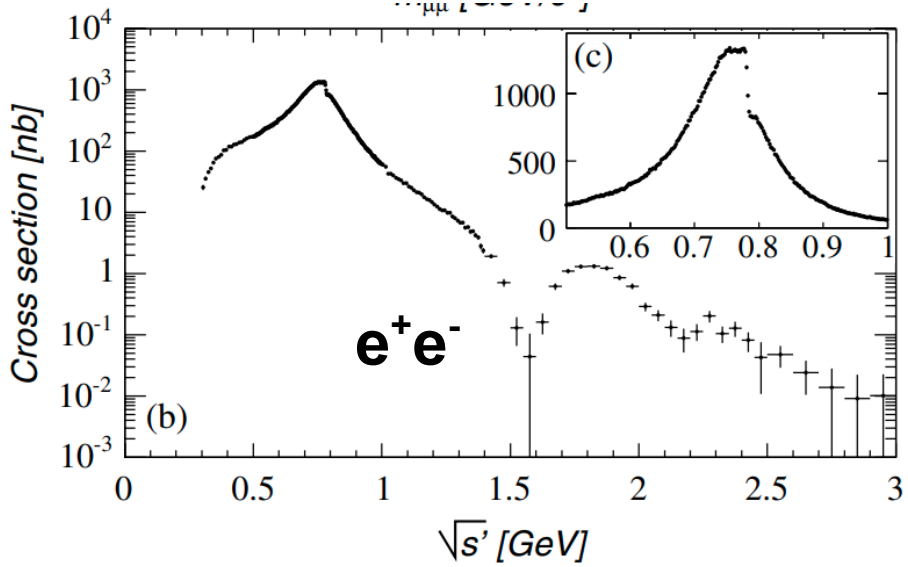

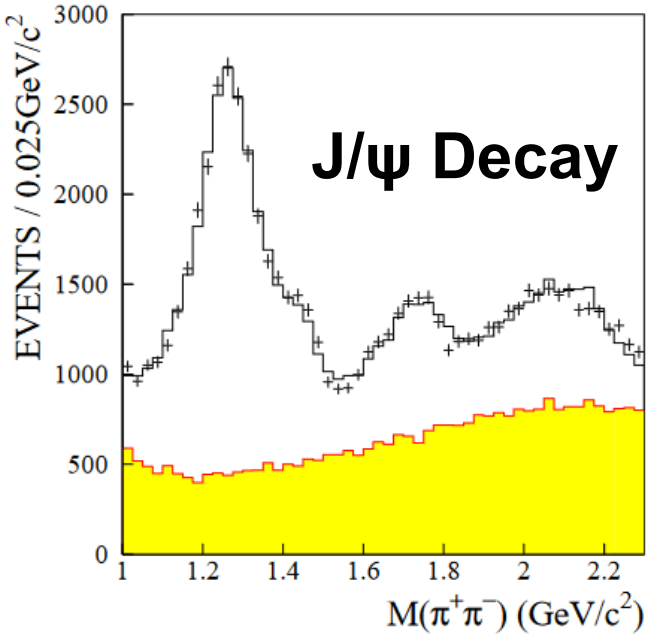

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More ...

Future Experiments: New Facilities or new ideas for existing facilities

How to connect Lattice and Experiment?

Ideas for 3-body amplitudes in experiments?