Postdoctoral Position on CMS at Brown University

LHC Job Matching Event

Jennifer Roloff (**Brown**)
Matt LeBlanc (**Brown**)

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CMS @ Brown

- **Active CMS group since 2004!** Soon, six active faculty.
  - Heintz & Landsberg
    - Involvement in tracking detector construction & operations on CMS & D0: HCAL & Trigger.
    - Contributions to CMS Outer Tracker & HGCal Phase-2 upgrades.
    - Diverse physics interests: Higgs, flavour, exotica…
  - Recently started or starting soon: Barone, Gouskos, LeBlanc, Roloff
    - Among the interest of new faculty, many subjects relevant to BOOST: **hadronic final states, flavour tagging, ML/AI, QCD, searches,** *etc.*
    - Growing interest in **Future Colliders and technologies!**
  - Strong ties to FNAL, BNL, CERN …
- **This position is to work with professors Jennifer Roloff and Matt LeBlanc**


Prof. Dave Cutts
Emeritus


Prof. Ulrich Heintz

BROWN

CMS


Prof. Greg Landsberg


Loukas Gouskos

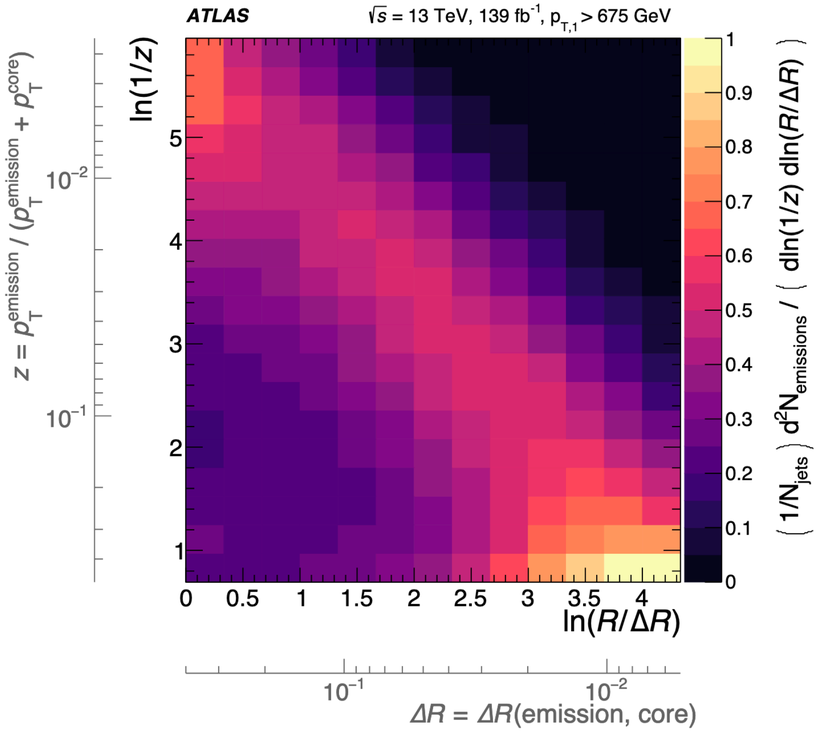

Gaetano Barone


Jennifer Roloff


Matt LeBlanc

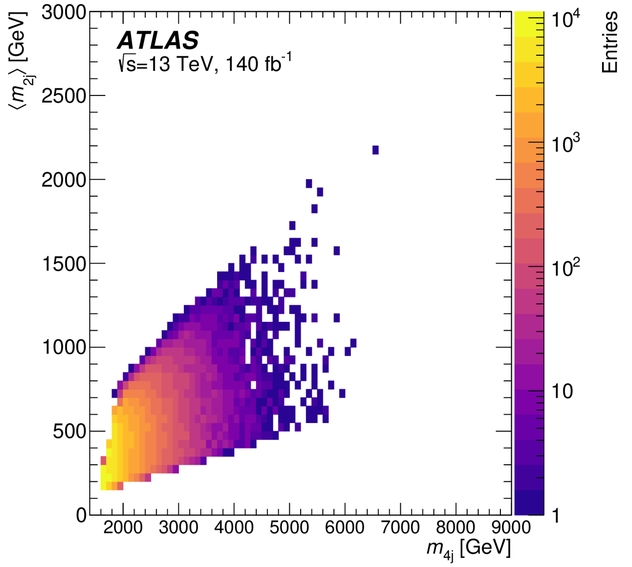
Potential physics topics

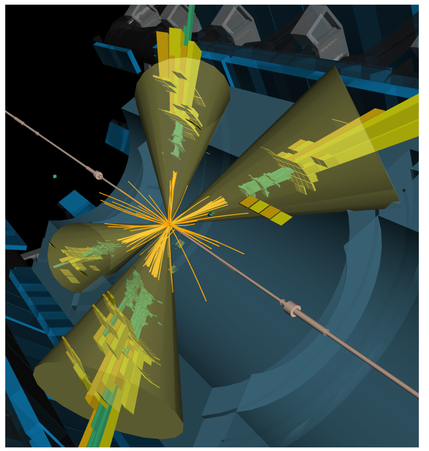
- Primarily interested in **hadronic final states,** with a primary focus on **precision jet & jet substructure measurements**
  - Important for development of theoretical predictions (parton shower modelling), interpretations (m_t, α_S), *etc.*
  - Lund jet plane, Soft-Drop observables, Event Isotropy w/ Optimal Transport (Briefings 1, 2), boosted top mass interpretations, q/g demixing …
- Also contributions to **searches for new physics** in hadronic final states
  - Multijet resonances, dark sector showers / semi-visible jets, , SUSY,VLQs, …



Developed ATLAS precision JSS programme → work done closely with theory community & MC authors!

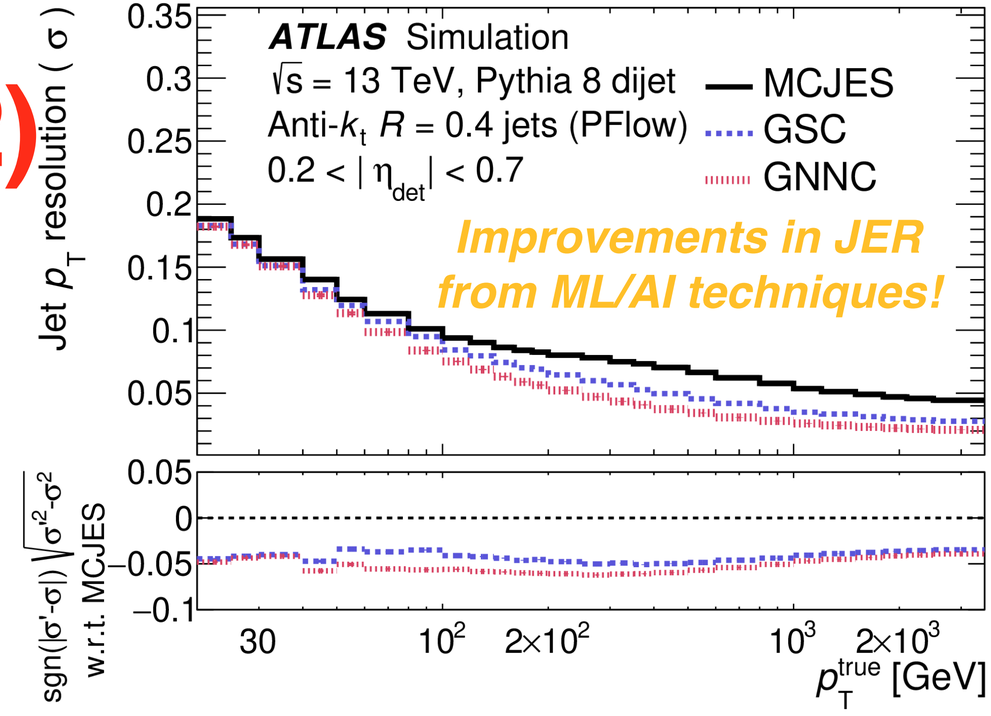
Recent resonance search in multijet final states…

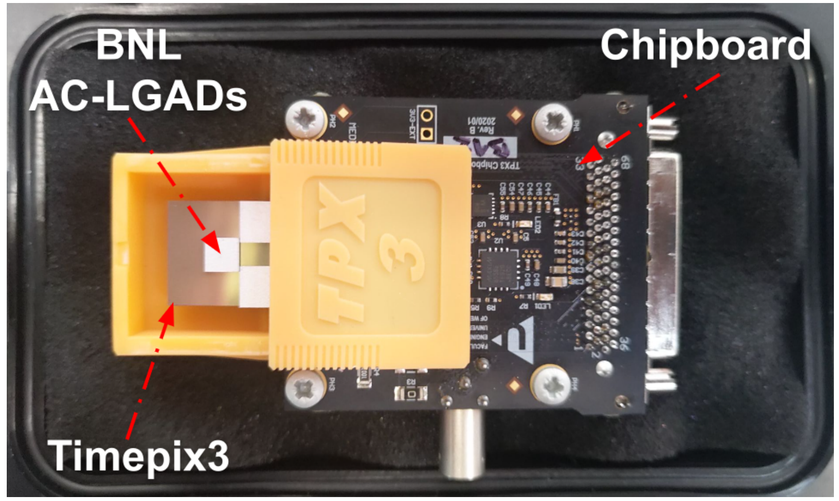




Potential physics topics (2/2)

- Significant contributions to jet reconstruction and calibration, with an interest in **novel reconstruction algorithms,** including the use of **ML/AI** in analyses and/or reconstruction.
  - New techniques for ATLAS jet calibration, Optimisation of ATLAS large-radius jet reconstruction, boosted W & top tagging …
- Option to be involved in **silicon detector R&D** with (AC)-LGADs
  - Ongoing collaboration with Brookhaven National Laboratory
  - Potential applications at EIC & other future colliders

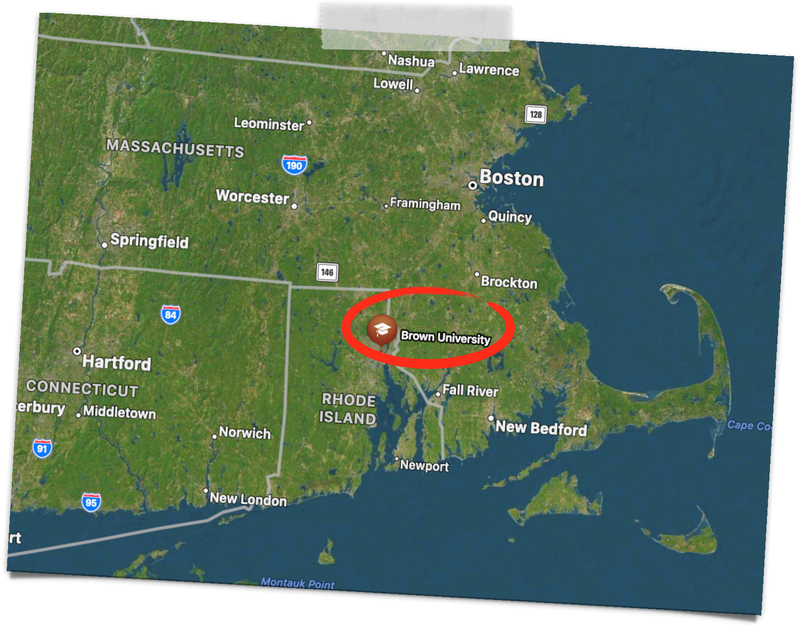


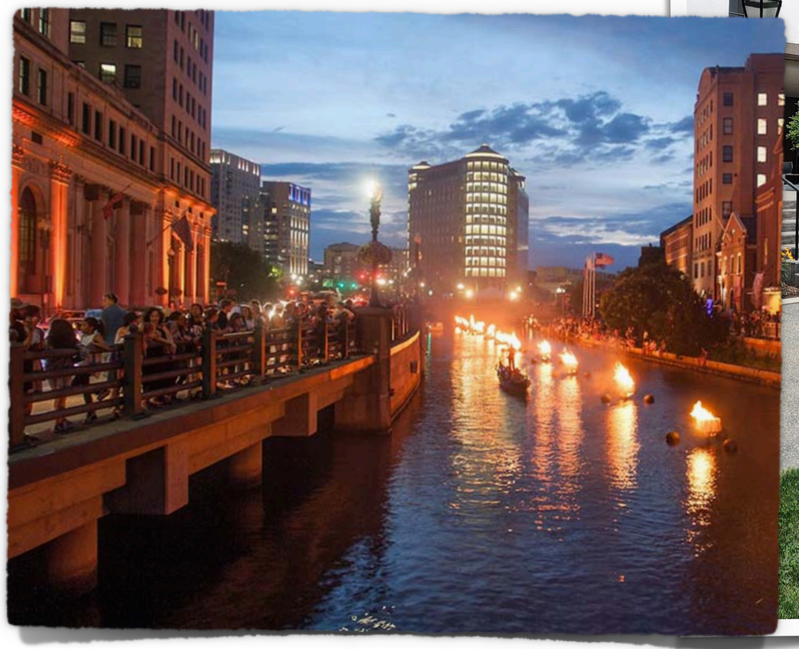


Detector technologies for future colliders!

Providence, RI

- **One of the oldest cities in New England (1636),** population ~200k
  - Easy to get around, a walkable US city.
  - **Close to Boston, and relatively close (rail connections) to many other major cities in the Northeast (DC, NYC, *etc.*).**
- These days, known for **culture, food & drink!**
  - **WaterFire Festival** in summer: >100 bonfires along rivers, accompanied by classical & world music.
  - **More restaurants per-capita** than any other US city! ***Good seafood …*** 🦞🐟
    - Local world-class Johnson & Wales University Culinary Arts Programme





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Images: Google, WireWater Providence, M. LeBlanc

Job details

- *Link to ad*: https://inspirehep.net/jobs/2694320
  - Deadline: December 1st
- *Contract length*: 2 years, with possible extensions beyond this
- *Contract start*: Flexible, with preference for Spring 2024
- *Location*: Preference to be based in Providence, but willing to discuss the possibility of being based at CERN
  - *Some teleworking possible, but not full time*
- If you have any questions, feel free to get in touch with us!
  - jroloff@brown.edu and matt.leblanc@brown.edu