

Postdoc position at U. of Rochester

▶ <https://inspirehep.net/jobs/1845283>

The High Energy Physics group at the University of Rochester invites applications for a position as Postdoctoral Research Associate on the CMS experiment at CERN. The Rochester group is involved in electroweak, top quark, and Higgs measurements, as well as in searches for dark showers. The successful candidate is expected to engage actively in analysis of CMS data and will have considerable freedom in developing this program, as well as participating in the hadronic calorimeter operation and upgrades. The position will be primarily based at CERN. Appointments are nominally for one year with the possibility of renewal up to five years total, subject to mutual satisfaction and the availability of funds under our grant.

For more information about this post, please contact: Prof. Aran Garcia-Bellido (aran@pas.rochester.edu).

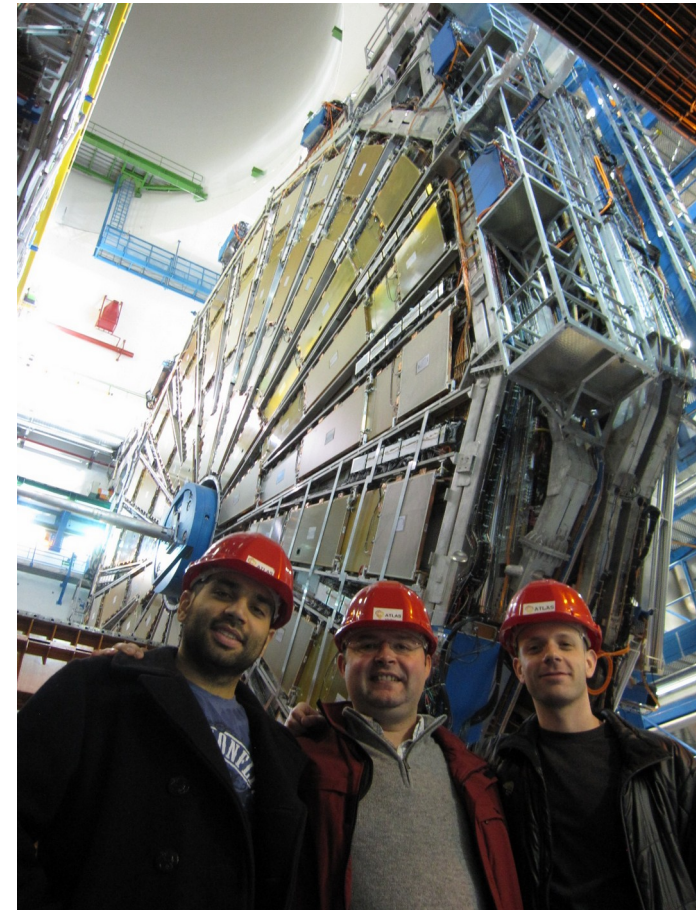
Applicants should send a curriculum vitae, including a 2-page description of research experience and interests, a list of publications to which the applicant has made direct contributions, and arrange for at least three letters of recommendation to be sent via email only to aran@pas.rochester.edu (Subject: HEP CMS postdoctoral search).

Applications will be reviewed as they are received. The position will remain open until filled. The University of Rochester has a strong commitment to diversity and actively encourages applications from candidates from groups underrepresented in higher education. The University is an Equal Opportunity Employer.

- ▶ **Deadline: Ongoing (nominally May 1st, or until filled): send letters ASAP**
- ▶ **Based at CERN (or at LPC Fermilab)**
- ▶ **Open to any nationality, age, experience... only requirement is having a PhD in particle physics (by the time the job starts)**
- ▶ **Duties: Expect involvement in HCAL or HGAL / PAG / POG (with varying effort) within existing UR activities or open new ones**

Rochester CMS group

- ▶ 3 Faculty: Arie Bodek, Regina Demina, Aran Garcia-Bellido
- ▶ 3 Sr. Scientists: Pawel de Barbaro, Marek Zielinski, Sergey Korjenewski (eng.)
- ▶ 4 Postdocs: Mario Galanti (left, this position), Otto Hindrichs, Aleko Khukhunaishvili, Evan Ranken
- ▶ 7 PhD Students: Rhys Taus, Joseph Dulemba, Colin Fallon, Maida Tariq, Keane Tan, Alan Herrera, Yu-Heng Yu

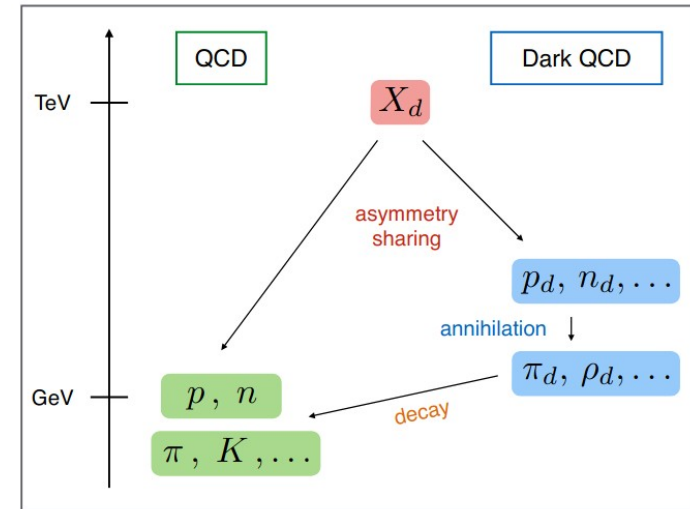


Physics analyses

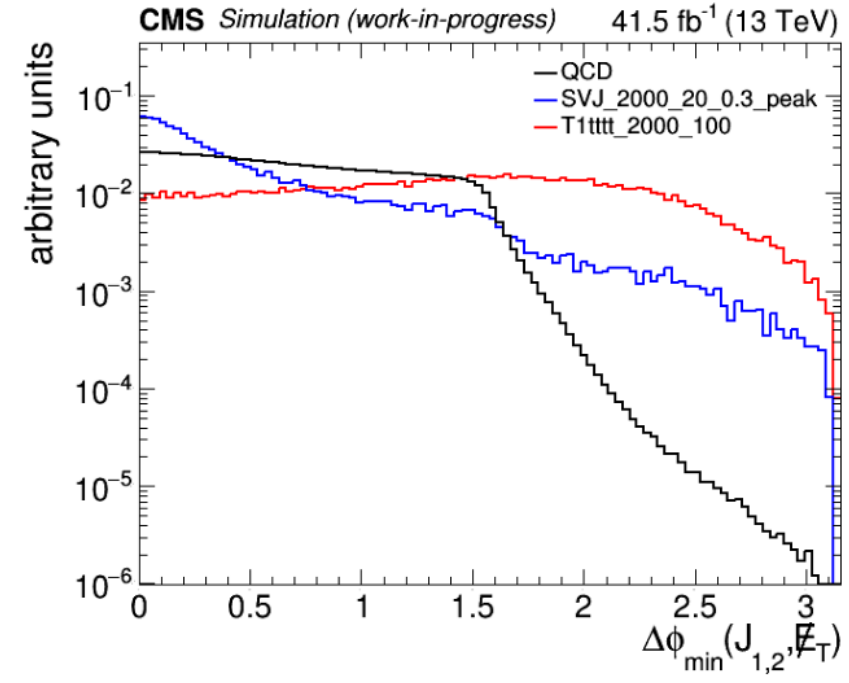
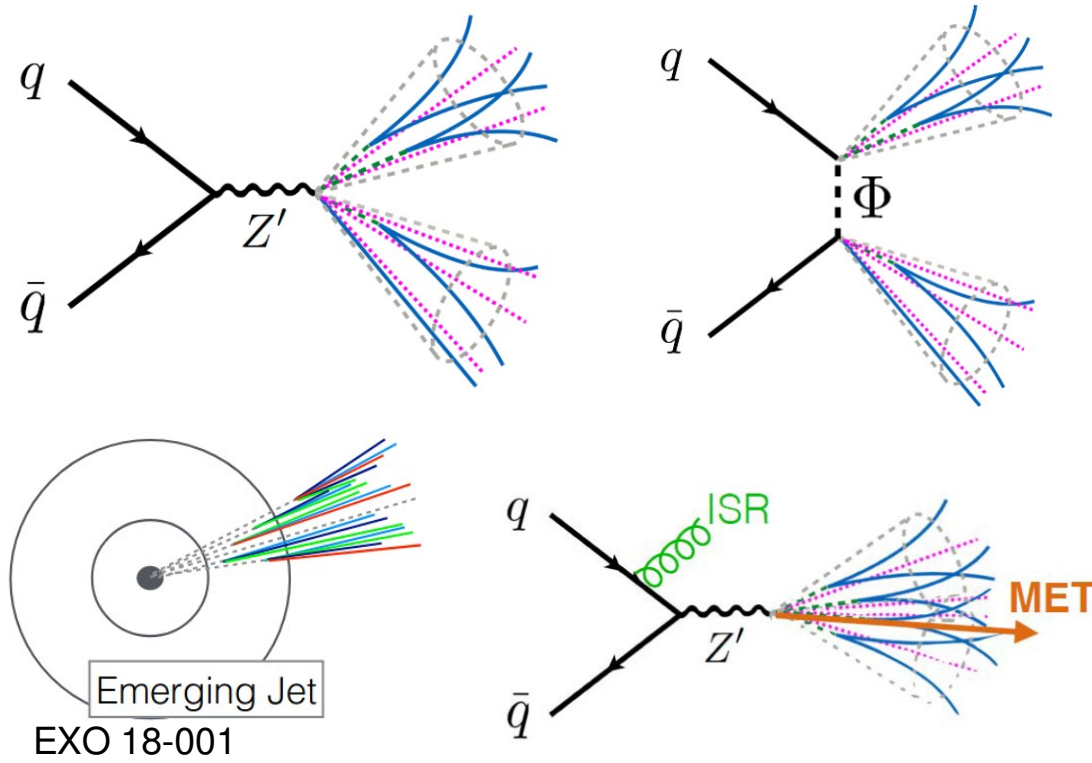
- ▶ SMP (Bodek): Precision EW measurements
 - $\sin^2\theta_w$, M_W , from W production
 - PDF constraints from W asymmetry and DY FwdBck asymm.
- ▶ HIG (Demina): Resonant Higgs decaying to $t\bar{t}$
 - Search for heavy CP even and CP odd Higgs
- ▶ TOP (Demina, G-B): Differential cross section
 - Differential cross section measurements $t\bar{t} \rightarrow \ell + \text{jets}$
 - Extraction of Yukawa coupling from EW corrections to $t\bar{t}$ production
- ▶ EXO (G-B): Search for Semivisible jets (SVJ), strongly coupled DM
 - Z' resonance SVJ
 - t-channel SVJ
- ▶ BPHYS (Galanti, was convener '16-18):
 - Measurement of the ϕ_s phase in $B_s \rightarrow J/\psi \phi$ decays

Semivisible jets

- ▶ Strongly-coupled dark sector
 - New $SU_{\text{dark}}(N)$ force “dark QCD”
 - Dark quarks \rightarrow dark pions
 - MET aligned with jets: SVJ
 - Rich phenomenology:
 - s-channel (Z' resonance), Boosted, t-channel, Emerging jet, Soft unclustered energy patterns (SUEPs)



- ▶ SVJ not covered by existing DM searches



Cohen, Lisanti, 1707.05326

POGs and Hardware

- ▶ Rochester muon and electron scale correction (Bodek)
- ▶ Heavy flavor tagging algorithms (Demina)
- ▶ Silicon operations and upgrade (Demina)
 - Operations, Silicon quality assurance for upgrade, MAPSA tests
- ▶ HCAL operations and upgrade (Bodek, G-B, De Barbaro, Zielinski)
 - Aleko current Operations Coordinator (Galanti was previously)
 - De Barbaro current HCAL upgrade manager (previous HCAL Manager)
 - Data monitoring (G-B was PFG conver), LUT certification, laser calibration, radiation damage studies
- ▶ HGCAL (Bodek, G-B, De Barbaro)
 - Pawel De Barbaro coordinates cassette assembly center at CERN
 - Studies of radiation hard scintillators, test beam data

Past CMS postdocs

- ▶ Mario Galanti: Sr. Data Scientist at Credit Suisse, Geneva
- ▶ Danila Tlisov: HCAL Deputy PM (2020)
- ▶ Roberto Covarelli: Assoc. Prof. University of Turin, CMS
- ▶ Pablo Goldenzweig: Sr. Scientist at KIT, Belle II
- ▶ Ping Tan: Sr. Data Scientist HERE Technologies, Chicago
- ▶ Jiyeon Han: Scientist at U. Pittsburgh/FNAL, Minerva
- ▶ Hennig Flaecher: Reader at Bristol University, CMS
- ▶ Amnon Harel: CTO, Lingacom (Muon-based detector solutions, Israel)

Hidden Sector Parameters

$$q\bar{q} \rightarrow Z' \rightarrow \chi\bar{\chi}$$

