Particle Physics Faculty Meeting

- Agenda
  - News & Updates
  - Groups round table

Physical Sciences Return to Work

- Allayne has sent spreadsheet to begin process of how to coordinate a gradual return to work
- https://triumfoffice365-my.sharepoint.com/:x:/g/personal/amcgowan_triumf_ca/EW7BfKwBkGZIgsc2NDdd9sEBCDTiVid26ePvTUJeVC3xMQ?e=cFJTFe&wdLOR=c60F5C287-A7C9-D24F-945D-7CBD955A85F7
- Input from projects with opportunities on targeted research activities that can be completed while observing social distancing
- From town hall yesterday, director has formed two task forces

  1) Anne Louise Aboud: with focus on practical aspects of bringing people back onto campus
  2) Reiner Kruecken: with research focus

  More in next weeks town hall on 1)

ALPHA Hire

- Makoto and I met with Jens once more with
  - draft of Job description
  - draft of hire ad
  - list of potential candidates and where this would be advertised
  - rational for urgency/timeliness of position

- Jens said he will present case for hire to Reiner and Jon

PSD Mixer

SCIENCE

nature

Article | Published: 15 April 2020

Constraint on the matter–antimatter symmetry-violating phase in neutrino oscillations

The T2K Collaboration

Nature **580**, 339–344(2020) | Cite this article

11k Accesses | **2** Citations | **966** Altmetric | Metrics

nature

Article | Open Access | Published: 19 February 2020

Investigation of the fine structure of antihydrogen

The ALPHA Collaboration

Nature **578**, 375–380(2020) | Cite this article

nature physics

LETTERS

https://doi.org/10.1038/s41567-020-0868-y

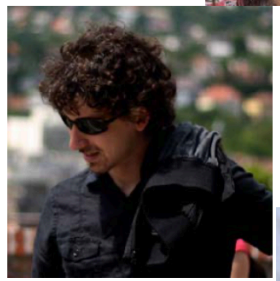
eck for updates

Colloquium today
by Mark Hartz 2pm!

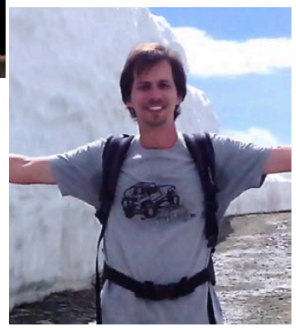
People

TD postdoc Djuna Croon has accepted a faculty position at Durham University/IPPP

Nuclear Physics/TITAN postdoc Roshani Silwal has accepted a faculty position at University of North Carolina-Appalachian State



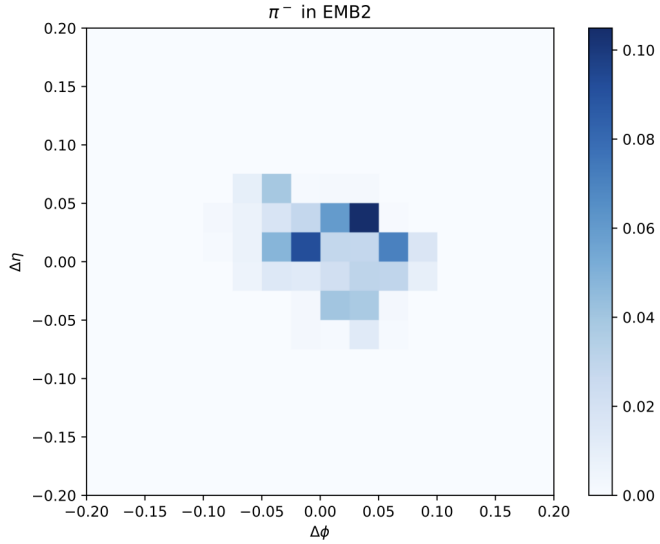
Max Swiatlowski appointed as Jet/Et_miss convener in ATLAS Physics Coordination



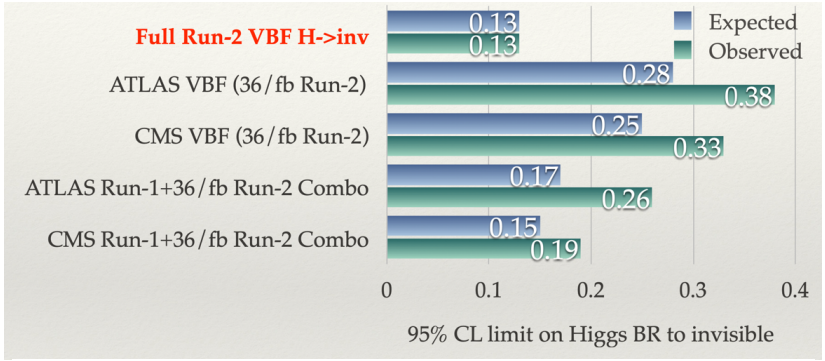
Erich Leistenschneider (TITAN & UBC, now MSU) was awarded the CAP-DNP Thesis Prize 2020

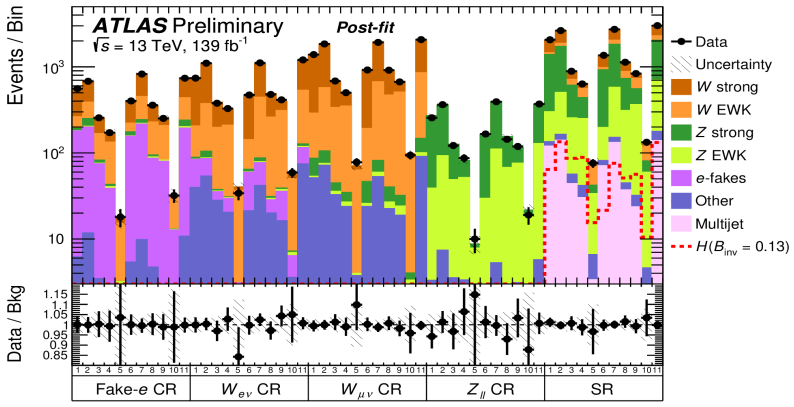
ATLAS

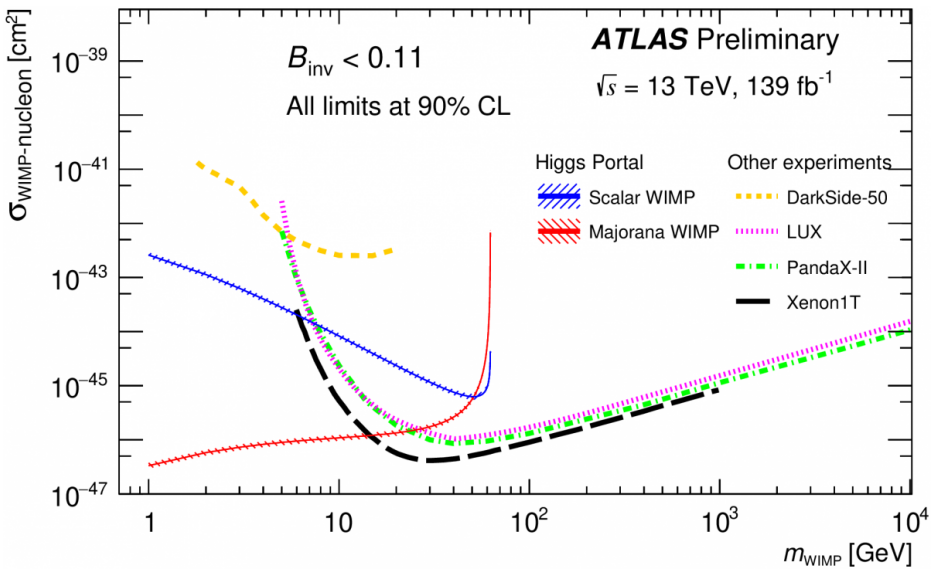
- Wojtek Fedorko approved as “Short Term Associate” for machine learning projects for hadronic final states (with Max Swiatlowski)
  - Use image-recognition and other approaches to improve the energy and classification of pions and other particles in ATLAS collisions
  - This ultimately helps improve the resolution of jets, which improves sensitivity to subtle signatures of new physics
  - Aim for this project to be at the heart of ATLAS reconstruction in the coming years



- Newly improved constraints on invisible decays of the Higgs boson
  - “Precision search” in ATLAS Exotics group to constrain Dark Matter
  - Complementary to direct searches from underground experiments (small Wimp masses!)







Future Collider Study paper

- Paper on sensitivity for SUSY Electroweak sector with a Future electron-proton collider (LHeC and FCC-eh) has been accepted by PRD

High Energy Physics - Phenomenology

[Submitted on 9 Dec 2019]

Search for the SUSY Electroweak Sector at ep Colliders

Georges Azuelos, Monica D'Onofrio, Sho Iwamoto, Kechen Wang

The sensitivity of future electron-proton colliders, the LHeC and FCC-eh, to weakly-produced supersymmetric particles is evaluated in this article. Supersymmetric scenarios where charginos ($\tilde{\chi}_1^{\pm}$) and neutralinos ($\tilde{\chi}_1^0$ and $\tilde{\chi}_2^0$) are nearly degenerate in mass are considered. Two sets of models, which differ in the mass of sleptons ($\tilde{\ell}$), are studied. Under the hypothesis that slepton masses are at the multi-TeV scale ("decoupled" scenario), the production processes for charginos and neutralinos at ep colliders, $p\,e^- \to j\,e^-\tilde{\chi}\tilde{\chi}$ with $\tilde{\chi} = \tilde{\chi}_1^0, \tilde{\chi}_1^{\pm}$ or $\tilde{\chi}_2^0$, are considered. For the models where slepton masses are above but close to $\tilde{\chi}_1^{\pm}, \tilde{\chi}_2^0$ masses ("compressed" scenario), contributions from the processes $p\,e^- \to j\,\tilde{\chi}\,\tilde{e}_L^-$ and $j\,\tilde{\chi}\,\tilde{\nu}$ followed by the decays $\tilde{e}_L^- \to \tilde{\chi}_{1,2}^0 + e^-$ and $\tilde{\nu} \to \tilde{\chi}_1^+ + e^-$ are also taken into account. These scenarios are analysed with realistic detector performance, using multivariate techniques. Effects of systematic uncertainties and electron beam polarization dependence are also discussed. The reach is found to be complementary to the one obtained at pp colliders, in particular for the compressed-slepton scenario.

TRIUMF

Science Week: Particle Physics

- August 17-21 - decided to be “online meeting”
- Strawman schedule (work in progress)

Monday	Tuesday	Wednesday	Thursday	Friday
TRIUMF 20 Year Vision: Intro to Process (keynote talks) • TRIUMF capabilities today • 20-year vision process	**Big questions in science for the next 20 years: Opportunities for TRIUMF (keynote)** • All fields	**Radioisotopes (synergies, keynote)** • Nuclear Physics • Life Sciences • Accelerators • Material Sciences • TRIUMF Innovations	**Detectors and instrumentation (synergies, keynote & contributed)** • Photosensors • Quantum sensing • In vivo dosimetry • …	**Discussion on 20-year vision for TRIUMF and pro posals from the community** • Future infrastructure and capabilities at TRIUMF • M9H • Storage rings
Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
TRIUMF Show & Tell (status update and recent highlights, 5-10 yr goals) • Nuclear Physics • Life Sciences • Particle Physics • Material Sciences • Accelerators	**Overview: Long-range plans (keynote talks)** • European Strategy • IPP & CINP presentation • IAEA & DOE • …. (more details in other sessions)	**Beyond Standard Model & Fundamental Symmetries (synergies, keynote)** • Nuclear Physics • Particle Physics • Emergent Phenomena in Material Sciences • UCN	**Astrophysics/Astroparticle physics (keynote & contributed)** • Nuclear Structure • Nuclear Astrophysics • Particle Physics • Theory • Cosmology	**Parallel sessions (Nuclear, Material, Particle, Life, Theory, Accelerators, Detectors …?**
Lunch	Lunch	Lunch	Lunch	Lunch
TRIUMF involvement in internation al projects/global challenges (keyn ote talks) • Nuclear Physics • Life Sciences • Particle Physics • Material Sciences • Accelerators • Neutrinos	**Accelerators (synergies, keynote & contributed)** • Cross disciplinary • THz • Neutron sources	**Theory & Data Science (synergies, keynote & contributed)** • Particle Physics • Nuclear Physics • Material Sciences • Quantum Computing	**TUG AGM**	**Discussion**
Coffee break	Coffee break	Coffee break	Coffee break	Coffee break
Discussion	**Discussion**	**Discussion**	**TUG AGM**	**Final remarks**

Round Table

- ATLAS
- T2K/HyperK
- UCN
- ALPHA
- SuperCDMS
- Pienu
- NA62
- DEAP
- SNO+
- EXO
- HALO
- g-2
- Belle 2
- Theory

Next Meeting

- June 11th 12:30 BlueJeans Video
- Have a good Victoria Day Long Weekend!