Dawson Enriched Science

WHAT IS ENRICHED SCIENCE?

Dawson Enriched Science is a profile in the Science Program for high-achieving students who want to enhance their learning experience by engaging in curricular and extra-curricular activities that go above and beyond the regular Science Program.

WHAT IS ENRICHED SCIENCE?

Enriched Science offers two profiles:

- **Health Science**
- **Pure & Applied Science**

WHY CHOOSE ENRICHED SCIENCE?

Students in the Enriched Science program benefit by being part of a tight-knit community of students and faculty who are keen to engage in enriched activities for learning. More specifically, students benefit from:

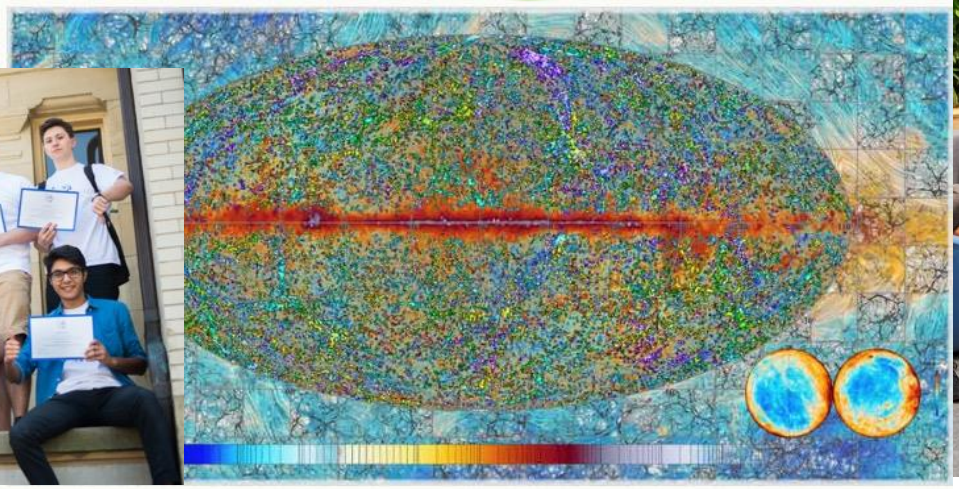
- Weekly seminars
- Common schedule blocks for extra-curricular activities
- Extra material in courses
- An emphasis trans-disciplinary learning
- Visits to research and engineering facilities
- Faculty profile coordinators

EXAMPLES OF WEEKLY SEMINARS

- **The Effect of Cannabis on Teenagers' Brain and Mental Health** - Dr. Gabriella Gobbi, Department of Psychiatry, McGill University
- **Fast Radio Bursts From Deep Space** - Dr. Victoria Kaspi, Department of Physics, McGill University
- **Legal Aspects of Health and Life Science Research and Patenting Life** - Dara Jospé, Fasken Law Firm
- **Epigenetic Factors and Environmental Influences on Brain Development** - Dr Kieren O'Donnell, Douglas Institute
- **Engineering in the Real World** - Hendrik Minde (P.Eng.), Airbus
- **Using Microbes to Save the Planet and Learning Chemistry Along the Way** – Dr. Elisabeth Cadieux, Dawson College

EXAMPLES OF ENRICHMENT ACTIVITIES

- **Science Participating with Arts & Culture in Education -** A dynamic project that bridges art, science and culture called S.P.A.C.E. (http://space.dawsoncollege.qc.ca).



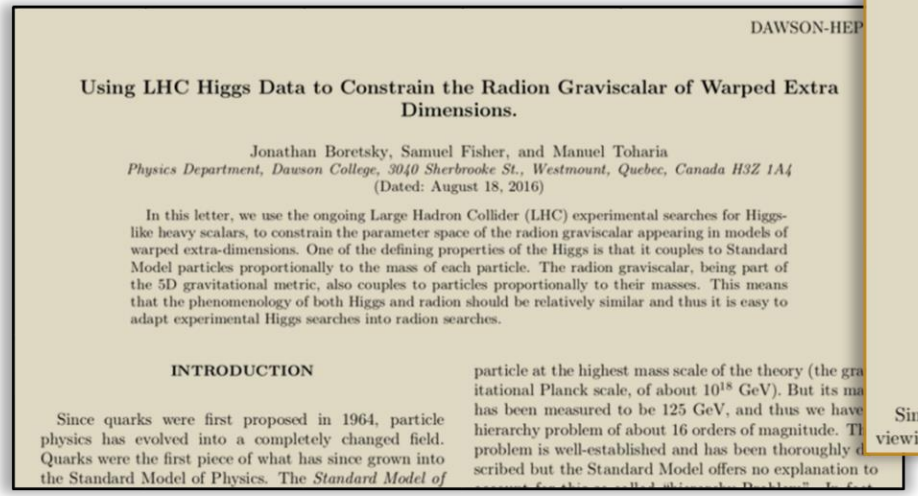
EXAMPLES OF ENRICHMENT ACTIVITIES

- **Dawson Neuroscience Research Group –** Seminars and research projects with researchers from Dawson, McGill, UdeM – including the opportunity to do a summer internship.

Cégépiens et apprentis chercheurs

EXAMPLES OF ENRICHMENT ACTIVITIES

- **The Dawson High Energy Particle Physics Group** – A high energy particle physics project that includes the opportunity to contribute to publishable work (https://mtzhep.wordpress.com).



DAWSON-HEP

Using LHC Higgs Data to Constrain the Radion Graviscalar of Warped Extra Dimensions.

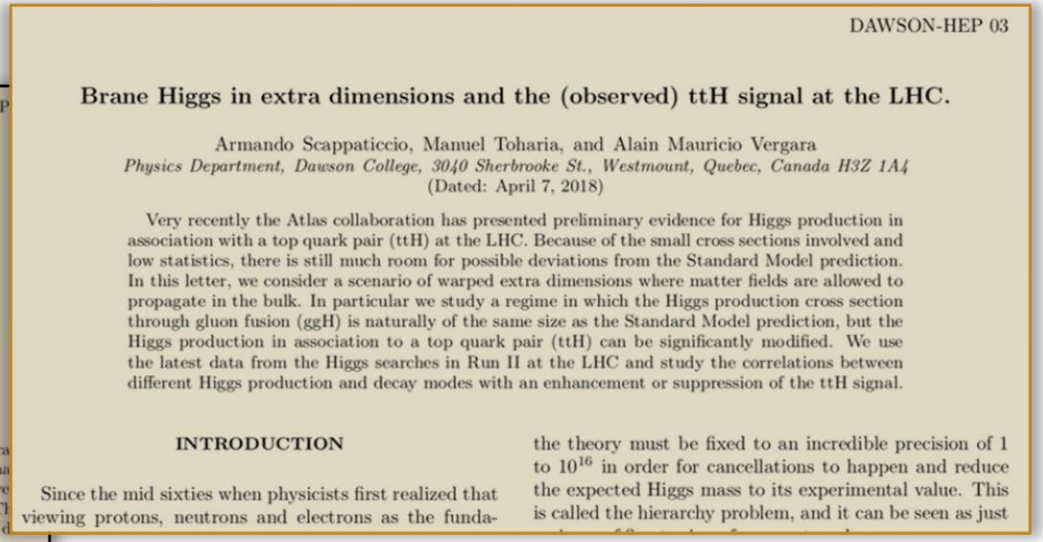
Jonathan Boretsky, Samuel Fisher, and Manuel Toharia
Physics Department, Dawson College, 3040 Sherbrooke St., Westmount, Quebec, Canada H3Z 1A4
(Dated: August 18, 2016)

In this letter, we use the ongoing Large Hadron Collider (LHC) experimental searches for Higgs-like heavy scalars, to constrain the parameter space of the radion graviscalar appearing in models of warped extra-dimensions. One of the defining properties of the Higgs is that it couples to Standard Model particles proportionally to the mass of each particle. The radion graviscalar, being part of the 5D gravitational metric, also couples to particles proportionally to their masses. This means that the phenomenology of both Higgs and radion should be relatively similar and thus it is easy to adapt experimental Higgs searches into radion searches.

INTRODUCTION

Since quarks were first proposed in 1964, particle physics has evolved into a completely changed field. Quarks were the first piece of what has since grown into the Standard Model of Physics. The *Standard Model of*

particle at the highest mass scale of the theory (the gra
itational Planck scale, of about 10^{18} GeV). But its ma
has been measured to be 125 GeV, and thus we have
hierarchy problem of about 16 orders of magnitude. Th
problem is well-established and has been thoroughly d
scribed but the Standard Model offers no explanation to



DAWSON-HEP 03

Brane Higgs in extra dimensions and the (observed) ttH signal at the LHC.

Armando Scappaticcio, Manuel Toharia, and Alain Mauricio Vergara
Physics Department, Dawson College, 3040 Sherbrooke St., Westmount, Quebec, Canada H3Z 1A4
(Dated: April 7, 2018)

Very recently the Atlas collaboration has presented preliminary evidence for Higgs production in association with a top quark pair (ttH) at the LHC. Because of the small cross sections involved and low statistics, there is still much room for possible deviations from the Standard Model prediction. In this letter, we consider a scenario of warped extra dimensions where matter fields are allowed to propagate in the bulk. In particular we study a regime in which the Higgs production cross section through gluon fusion (ggH) is naturally of the same size as the Standard Model prediction, but the Higgs production in association to a top quark pair (ttH) can be significantly modified. We use the latest data from the Higgs searches in Run II at the LHC and study the correlations between different Higgs production and decay modes with an enhancement or suppression of the ttH signal.

INTRODUCTION

Since the mid sixties when physicists first realized that viewing protons, neutrons and electrons as the funda-

the theory must be fixed to an incredible precision of 1 to 10^{16} in order for cancellations to happen and reduce the expected Higgs mass to its experimental value. This is called the hierarchy problem, and it can be seen as just

EXAMPLES OF ENRICHMENT ACTIVITIES

- **Coffee & Coding** – Learn to program and explore the world of Artificial Intelligence through informal and interactive sessions with members of the Dawson AI initiative.

EXAMPLES OF ENRICHMENT ACTIVITIES

- **Centre of Excellence on Longevity Research Project** – a collaborative research project with the McGill Faculty of Medicine, The Jewish General Hospital and the Montreal Museum of Fine Arts.

EXAMPLES OF ENRICHMENT ACTIVITIES

- **Lab and research facility visits - Trips to visit labs and science/engineering facilities including:**
  - The National Research Council (Ottawa and Montreal)
  - The Transportation Safety Board (Ottawa)
  - The Canadian Nuclear Laboratories (Chalk River, Ontario)
  - Université de Montréal, McGill & Concordia Universities
  - Kruger Énergie inc (Wind Farm, Montéregie)
  - Etc…

Applying to Enriched Science

- **To qualify for the Enriched Science Program students need an 80% overall average from high school at the time of application, as well as;**
  - 85% or higher in two of three science prerequisites, **and**
  - Minimum of 80% in the third.
- **Admission to all Science profiles is competitive. The number of students that Dawson College can accept into the Science program is limited, therefore students with the highest grades in high school have a better chance of being admitted.**

Applying to Enriched Science

- **Students may apply directly for admission to Enriched Science.**
  - Enriched Health Science, 200.H1
  - Enriched Pure and Applied Science, 200.P1
- **Students who are not accepted into Enriched Science will be automatically considered for the regular stream of the profile (Health or Pure & Applied) to which they have applied.**

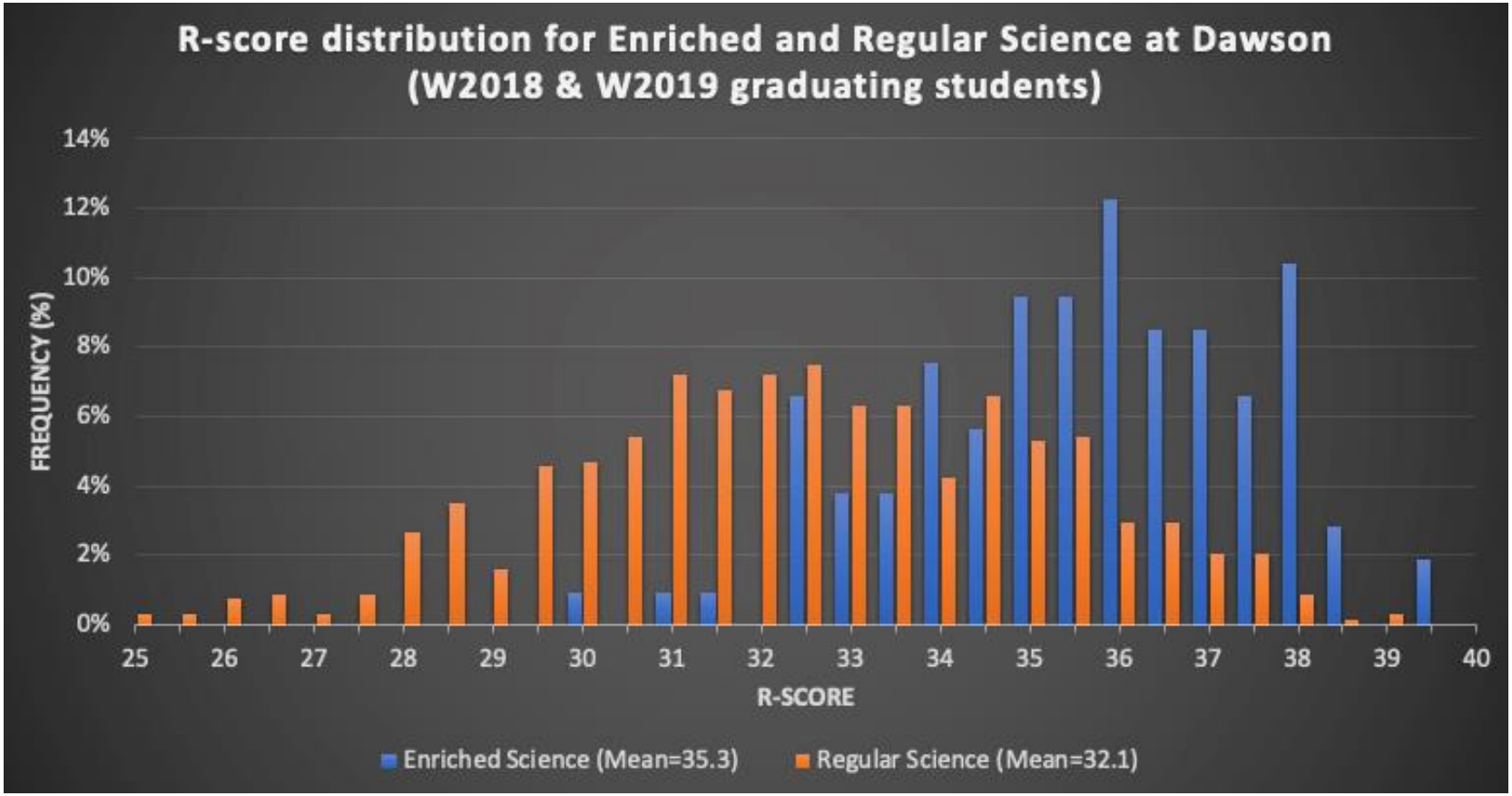
R-SCORES

Importantly, R-scores are in no way negatively impacted by being in a profile of high-achieving students.

- Assessments are equivalent and exams are the same as regular sections
- R-scores for all Science students are calculated across the entire cohort of regular and Enriched Science.

Dawson Enriched Science

R-SCORES



Questions?

To know more, please visit

- Dawson Heath Science:
  https://www.dawsoncollege.qc.ca/health-science/
- Dawson Pure and Applied Science:
  https://www.dawsoncollege.qc.ca/pure-applied/

Look for Enriched Science along the top right menu bar.