

2014 Levi L. Conant LECTURE SERIES



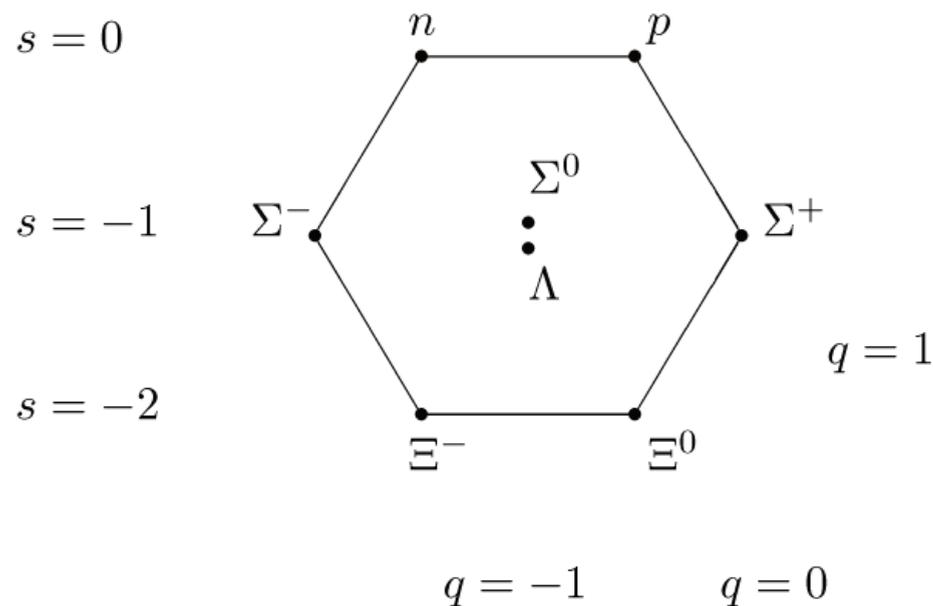
John Huerta earned his PhD in 2011 in mathematics from the University of California, Riverside. Huerta is a mathematical physicist, currently a postdoctoral fellow at Centre for Mathematical Analysis, Geometry, and Dynamical Systems in Lisbon. In 2013 he shared the Levi L. Conant Prize with his advisor, John Baez, at University of California, Riverside, for the paper "The Algebra of Grand Unified Theories." *Bulletin of the American Mathematical Society* 47:483-552, 2010.

John Huerta

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Symmetry in Mathematics and Physics

Friday, April 18, 3 pm • Fuller Labs, Upper Perreault Hall



Deep at the heart of any discipline lies the idea of "symmetry." We will explore the fascinating tale of symmetry, from its codification into a powerful tool called group theory by mathematicians in the 19th century, to its rise to the center of fundamental physics in the 20th century, and its evolution and influence today. Group theory begins with intuitive, pictorial ideas of what it means to have symmetry. In the 1830s, the 20 year old genius Evariste Galois invented group theory and turned it into a powerful tool in pure mathematics, but one devoid of apparent practical use. Much later, after decades of mathematical development, Albert Einstein introduced symmetry to physics with his theory of relativity. Yet it was only in the latter half of the 20th century that we discovered the true importance of symmetry in physics: particle physicists discovered it at the heart of the laws of nature, essentially giving our most basic laws their form. It has continued to have a central place ever since, and today, new mathematical ideas about symmetry, with exotic names like "quantum groups" and "higher categories," may be poised to revolutionize the physics of the 21st century.

Levi Leonard Conant, 1857–1916

Levi Conant was a mathematician and educator who spent most of his career as a faculty member at Worcester Polytechnic Institute; he served as head of the Mathematics Department and as acting president from 1911 to 1913. Conant was noted as an outstanding teacher, and an active scholar. He published a number of articles in scientific journals and wrote four textbooks: *The Number Concept: Its Origins and Development* (1896), *Original Exercises in Plane and Solid Geometry* (1905), *Five-Place Logarithmic and Trigonometric Tables* (1909), and *Plane and Spherical Trigonometry* (1909). Upon his premature death in 1916 he made a large bequest to The American Mathematical Society, which established the Levi L. Conant Prize, awarded annually to recognize the best expository paper published in either *Notices of the AMS* or *Bulletin of the AMS* in the previous five years.

Sponsored by WPI and hosted by the Department of Mathematical Sciences.
Students and faculty are invited to meet the speaker at a reception following the lecture.



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