



# Physics Colloquium

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## Modern String Theory Confronts Particle Physics and Black Holes

String theory, as the prime candidate for quantum unification of particle physics and gravity, sheds light on important fundamental questions of theoretical physics such as the microscopic structure of black holes and the geometric origin of particle physics. We review these developments, such as the introduction of extended objects - Dirichlet branes - and highlight the important geometric role these objects play in deriving particle physics and the microscopic structure of black holes. We also highlight recent progress made in deriving particle physics from F-theory, a geometric domain of string theory at finite string coupling, and focus on three family Grand Unified and Standard Model constructions.

**THURSDAY, OCTOBER 19, 2017 IN LL. 316**

*REFRESHMENTS AT 3:45PM IN LL. 317*

**Mirjam Cvetič's** research encompasses broad thrusts in fundamental theory: gravitational physics in string theory (seminal work on black holes in string theory); work at the interface with differential and algebraic geometry (new special curvature (holonomy) spaces); leading efforts in string theory compactification (first chiral supersymmetric intersecting D-brane models, new D-instanton effects and F-theory compactification); the study of particle physics implications of string theory. She has published over 300 papers with over 18,500 citations (according to InSPIRE, high energy data base).

She is an Elected Member of the European Academy of Sciences and Art (2014), a recipient of Distinguished Alumni Award (2007) and a Fellow of APS (2001). She is an Editor of Physics Letters B (since 2000), an elected Chair of the Advisory Board of the KITP, Santa Barbara (2009-10), and has served on numerous national and international advisory panels, including HEPAP (U.S. High Energy Physics Advisory Panel). She received her PhD from the University of Maryland (1984), was a post-doctoral fellow at SLAC, Stanford University (1984-87), and has had a primary affiliation with the University of Pennsylvania since 1987.