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### **Looking for New Fundamental Forces in the Cosmos**

DAVID MORRISSEY, TRIUMF

New gauge forces are predicted by many theories of new fundamental physics beyond the Standard Model of particle physics. If a gauge force has a mass gap and interacts very weakly with regular matter, the corresponding gauge boson (or bound states derived from it) can decay in the early universe. Specific examples include dark photons derived from a new Abelian gauge invariance and dark glueball boundstates arising from an exotic non-Abelian gauge invariance. In this talk I will discuss how cosmological observations such as measurements of the cosmic microwave background radiation and the primordial light element abundances can be used to probe such new forces. Along the way, I will also describe an improved calculation of the effects of electromagnetic energy injection below 1 GeV on nucleosynthesis and describe how it is qualitatively different from injection at higher energies.