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Nuclei and the Early Universe: Looking Beyond the Standard Model

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Despite the many successes of the Standard Model, we know that it must be the low-energy limit of a more comprehensive theory describing the forces of nature from the earliest moments of the cosmos. Both experimental observation–including neutrino oscillations and the predominance of matter over anti-matter–as well as theoretical considerations, such as the stability of the electroweak scale, point to this more comprehensive theory. In this talk, I discuss a variety of nuclear physics experiments that will provide important clues about the "new" Standard Model – including those that look for tiny deviations from Standard Model predictions as well as experiments sensitive to violations of fundamental symmetries. I emphasize how these studies complement those being carried out at high energy colliders and consider some of the key theoretical issues in their interpretation.