

The impact of atomic precision measurements in high energy physics

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In this talk I will review two important topics of atomic physics of great relevance in the field of elementary particles. First I will discuss the precision measurements of parity violation in cesium. The results of these measurements are, perhaps, the first signal of something going wrong within the Standard Model of elementary particles. In fact, if taken literally, the experimental results exclude the Standard Model at the level of 95 % of confidence level. Furthermore they have serious implications in many models of physics beyond the Standard Model, as models involving new space-time dimensions. The second topic that I will review concerns the violation of the product of the discrete symmetries, parity (P), charge-conjugation (C) and time-reversal (T). The conservation of this quantity is a theorem for local field theories (CPT theorem) and its violation would have the most serious consequences in our understanding of the elementary particle world. We will review recent proposals for testing this invariance property.