Plenary Talk PV XI Fri 9:45 E 415

100 Years of Mass Spectrometry: From Thomson to Modern Methods and Applications — •Lutz Schweikhard — Institut für Physik, Ernst-Moritz-Arndt-Universität Greifswald

In 1913 J.J. Thomson reported on experiments with "Rays of positive electricity": Ion beams, as we would call them today, were deflected by electric and magnetic fields and, thus, were dispersed into separate parabolas on a photographic plate. In retrospect, this finding marked the birth of mass spectrometry which was immediately recognized as an ideal method of chemical analysis with highest sensitivity. In addition, Thomson indicated the discovery of a new isotope of neon, i.e., more generally speaking, of a new nuclide. Soon after, the so-called mass defect of atomic nuclei was discovered which gives direct access to the binding energy of atomic nuclei. Over the decades spanning its first century and still today, more and more mass-spectrometry methods were invented and refined while along with these developments the range of applications was expanded. The talk will give an overview of the techniques and will touch upon a couple of examples in physics research.