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Coulomb crystal as a detector in electron impact ionization experiment LUKASZ KLOSOWSKI, MARIUSZ PIWINSKI, SZYMON WOJTEWICZ, DANIEL LISAK, DAREK DZICZEK, STANISLAW CHWIROT, Institute of Physics, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University in Torun, Grudziadzka 5, 87-100 Torun, Poland — Ensembles of ions in trap at sufficiently low temperature can form a structure called Coulomb crystal. Some species of such ions can be optically cooled and observed using CCD camera. Number of ions composing the crystal can be determined with high accuracy. Other, invisible species of ions can be sympathetically cooled and detected indirectly by observation of their influence on visible ones. Thus, the efficiency of ionization processes leading to Coulomb crystal formation can be determined. We present preliminary results for electron-impact-ionized molecules forming a multi-species Coulomb crystal in a linear segmented Paul trap together with atomic calcium ions.

Institute of Physics, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University in Torun,

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