

VA 3: UHV systems at FAIR and KATRIN

Time: Monday 14:00–15:00

Location: H 0106

Invited Talk

VA 3.1 Mon 14:00 H 0106

The Ultra High Vacuum system of FAIR (Facility for Antiproton and Ion Research) — ●HARTMUT REICHSPRENGER¹, MARIA CRISTINA BELLACHIOMA¹, ANDREAS KRAEMER¹, HOLGER KOLLMUS¹, MARKUS BENDER¹, and STEFAN WILFERT^{1,2} — ¹Gesellschaft für Schwerionenforschung mbH GSI, Darmstadt, Germany — ²Otto-von-Guericke-Universität, Magdeburg, Germany

The accelerator complex of FAIR is planned to deliver heavy ion beams of increased energy and highest intensity. Whereas the energy is planned to be increased roughly by a factor of 10, the ion beam intensities are planned to be enlarged by three orders of magnitude. An UHV-accelerator system with a base pressure in the low 10E-12mbar regime is required, even under the influence of ion beam loss induced desorption processes.

An intensive program was started to upgrade the Ultra High Vacuum (UHV) system of the existing synchrotron SIS18 (bakeable) and to design and lay out the UHV systems of the future synchrotron SIS100 and SIS300 (mainly cryogenic). The strategy of this program includes basic research on the physics of the ion induced desorption effects as well as technical developments, design and prototyping on bakeable UHV components (vacuum chambers, diagnostics, bakeout-control, pumping speed), collimator for controlled ion beam loss, NEG

coating and cryogenic vacuum components.

The key issues of FAIR relevant UHV R&D and system design will be presented

VA 3.2 Mon 14:40 H 0106

Outgassing measurements after 350°C bake-out of the KATRIN spectrometer — ●JOACHIM WOLF — Universität Karlsruhe, IEKP, Postfach 3640, 76021 Karlsruhe (KATRIN Collaboration)

The **K**ARlsruhe **T**RItium Neutrino experiment (KATRIN) aims to measure the electron neutrino mass from the β -decay of tritium with an unprecedented sensitivity of $0.2 \text{ eV}/c^2$. The kinetic energy of the decay electrons will be measured in an electrostatic spectrometer. Background considerations require a very good vacuum of 10^{-11} mbar or better in the large spectrometer vessel (volume 1240 m^3 , surface: 690 m^2). A combination of NEG pumps and turbo-molecular pumps will provide the necessary pumping speed. In addition a very clean surface and low outgassing rates are mandatory. This talk reports on the commissioning and final outgassing measurements before and after bake-out at 350°C .

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