
VA 2: Vacuum pumps and gauges

Time: Monday 12:00–12:40

Location: H 0106

VA 2.1 Mon 12:00 H 0106

Investigations of turbo-molecular pumps in magnetic fields for the KATRIN experiment — ●ALEKSANDRA GOTSOVA and NORBERT KERNERT — Tritiumlabor, Forschungszentrum Karlsruhe, 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 decay electrons will be guided magnetically from the gaseous tritium source through a differential pumping section (DPS) to the high resolution spectrometer. The DPS consists of a beamline with super-conducting magnets and 16 turbo-molecular pumps (Leybold WMAG 2800), which have to prevent tritium gas from entering the UHV spectrometer section.

Systematic studies have been conducted, investigating the rotor temperature and stability of operation of the turbo-molecular pumps (TMP) at full speed as a function of magnetic field strength and direction of the field. The temperature of the moving rotor was measured in

vacuum with an infra-red camera. In addition the stability of the pump controller in magnetic fields has been tested. This talk reports on the results of these measurements, giving limits for the safe operation of TMPs in magnetic fields.

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VA 2.2 Mon 12:20 H 0106

Partial Pressure Measurement — ●ANDREAS SCHOPPHOFF — Pfeiffer Vacuum GmbH, Berliner Str. 43, 35614 Asslar

Partial pressure gauges are essential tools to generate a better knowledge of the state of vacuum. Typical applications are leak detection and residual gas analysis. One of the most often used partial pressure gauge is the quadrupole mass spectrometer. Because of its small size and the high performance it is used in multiple applications. The general operation of a quadrupole mass spectrometer will be discussed in this presentation.