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HIDRA-MAT: A Material Analysis Tool for Fusion Devices

DANIEL ANDRUCZYK, RABEL RIZKALLAH, FELIPE BEDOYA, AVEEK KAPAT, HANNA SCHAMIS, JEAN PAUL ALLAIN, University of Illinois at Urbana - Champaign — The former WEGA stellarator which is now operating as HIDRA at the University of Illinois will be almost exclusively used to study the intimate relationship between the plasma interacting with surfaces of different materials. A Material Analysis Tool (HIDRA-MAT) is being designed and will be built based on the successful Material Analysis and Particle Probe (MAPP) which is currently used on NSTX-U at PPPL. This will be an *in-situ* material diagnostic probe, meaning that all analysis can be done without breaking vacuum. This allows surface changes to be studied in real-time. HIDRA-MAT will consist of several *in-situ* diagnostics including Langmuir probes (LP), Thermal Desorption Spectroscopy (TDS), X-ray Photo Spectroscopy (XPS) and Ion Scattering Spectroscopy (ISS). This presentation will outline the HIDRA-MAT diagnostic and initial design, as well as its integration into the HIDRA system.

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