Contribution ID: **91** Type: **Oral**

THZ-FREQUENCY SPIN-HALL DETECTOR BASED ON ANTIFERROMAGNET

We demonstrate theoretically that a bi-layer structure consisting of a metallic layer with a strong spin-orbit (SO) interaction (such as Pt) and a layer of a bi-axial antiferromagnet (AFM), such as NiO, with weak easy-plane anisotropy can be a base of a THz-frequency signal detector with output DC signal generated due the THz-frequency spin-diode effect. Previously it was shown that such Pt/NiO structure biased by a DC current can generate output THz-frequency AC signal. Here we consider an inverse effect: the generation of a DC voltage across the structure under the action of THz-frequency AC signals. We theoretically compare influence of DC and AC currents flowing through the Pt layer on the magnetization dynamics in the AFM layer of the structure and show that detector's output voltage can exceed 1 mV.

Primary author: Ms VOT, Nataliia (Taras Shevchenko National University of Kyiv)

Co-author: Dr PROKOPENKO, Oleksandr (Taras Shevchenko National Unaversity of Kyiv)

Presenter: Ms VOT, Nataliia (Taras Shevchenko National University of Kyiv)

Track Classification: Physics of Magnetism