AGA 5: Nuclear Verification, Iran, Comprehensive Test Ban Treaty

Time: Friday 10:30–11:45 Location: AGA-H19

Invited Talk AGA 5.1 Fri 10:30 AGA-H19

International Diplomacy and the Iran Nuclear File — •Tariq Rauf — Vienna

Ever since the Iran nuclear file was opened in August 2002, there have been a series of missteps in international diplomacy till November 2014 when the Joint Plan of Action (JPA) was agreed in Geneva leading to the Joint Comprehensive Plan of Action (JCPOA) in Vienna in July 2015, between Iran and the EU/E3+3 (European Union; France, Germany, United Kingdom; China, Russia, United States). In May 2018, Trump stepped out of the JCPOA and imposed new sanctions, despite IAEA verification in Iran. Between June 2019 and June 2021, Iran has taken a series of steps notified in advance to the IAEA and it is now enriching at 20% and 60% U-235 under Agency verification. A weak team, failing presidency and stubbornness of Biden matched by Iran's hard line has led to the JCPOA in suspension. Eight rounds of proximity talks in Vienna have not produced results. This presentation will review and assess these developments.

AGA 5.2 Fri 11:15 AGA-H19

Onsite Verification of the Comprehensive Nuclear Test Ban Treaty at Very Low Yields — •Christopher Fichtlscherer[1,2], Julien de Troullioud de Lanversin[3], and Frank N. von Hippel[4] — [1]RWTH Aachen, Aachen, Germany — [2]IFSH, Hamburg, Germany — [3]Harvard University, Cambridge, U.S. — [4]Princeton University, Princeton, U.S.

The United States has accused Russia and suspects China of violating the Comprehensive Nuclear Test Ban Treaty (CTBT) at very low yields. They argue that the violating tests involve supercritical chain reactions that are forbidden under the U.S. interpretation of the treaty. Satellite images could show suspiciously large containment vessels being emplaced in tunnels. But offsite, there would be no detectable physical evidence to differentiate such tests from permitted subcritical tests. However, during onsite inspections, gamma emissions from the fission and neutron-activation products in the containment vessel could be measured to infer the energy released through fission during the test. Here a potential verification onsite measurement method is presented and tested in a theoretical scenario using the open-source OpenMC transport and ONIX depletion code.