AGA 5: Nuclear Weapons, Arms Control and Disarmament

Time: Thursday 14:30–17:00 Location: HS HISKP

Invited Talk AGA 5.1 Thu 14:30 HS HISKP

U.S. Physicists and Nuclear Arms Control During the Next Four Years — •Frank von Hippel — Princeton University

Nuclear arms control has been in retreat in the US since 2002 when President Bush Jr. took the U.S. out of the ABM Treaty. President Obama obtained Senate ratification of the New START Treaty (which expires in 2026) only in exchange for a commitment to "modernize" the entire US nuclear arsenal. China*s decision to build hundreds of missile silos has caused Congress to push for reversal of some post-Cold War nuclear reductions. A second Trump Administration may, like the first, be interested in resuming nuclear testing. It remains to be seen whether the US public can be engaged with nuclear weapons policy again, as it was in the early 1980s. The Physicists Coalition for Nuclear Threat Reduction has mobilized to educate Congress about the risks of nuclear war and opportunities to reduce them. We would welcome a similar mobilization in Germany, a member of NATO*s nuclear planning group

Invited Talk AGA 5.2 Thu 15:30 HS HISKP

How to Eliminate Nuclear-Weapon Programmes - with Physics! — •Moritz Kütt — Institute for Peace Research and Security Policy (IFSH)

Within nuclear-armed states, nuclear-weapon programmes include various techno-political structures for nuclear weapon development and production, and preparations for use and threat of use. This presentation will discuss essential steps related to the elimination of these programmes: First, ways to reduce the risk of nuclear escalation; second, ways to support dismantlement of weapon and weapon production facilities; and third, ways to deal with side effects of weapon activities, like environmental contamination caused by production and testing.

The presentation will further discuss examples of how physicists can make valuable contributions to each of these steps. For instance, a technical analysis of missile defense technology helps to reduce nuclear dangers. Physics can also support verification, an important aspect of dismantlement. In this regard, results from a recent study on potential cheating attempts of gamma-spectroscopy measurements are presented, as well as innovative methods to demonstrate the absence of nuclear weapons using cosmic-origin particles. The talk will conclude with an outlook on future research questions to be undertaken, in particular with regard to the remediation of nuclear weapon test effects.

AGA 5.3 Thu 16:30 HS HISKP

The Physics of Effects of Nuclear weapons revisited — •Götz Neuneck — IFSH, University of Hamburg

Since the beginning of the nuclear age which started with the nuclear explosions in Hiroshima and Nagasaki, models and simulations of the effects of nuclear weapons have been undertaken by scientists and institutions. Beyond the material destruction, the societal, radiological, environmental and climatic effects have serious consequences for public health, global socioeconomic systems, agriculture etc. The United Nations proposed to establish an Independent Scientific Panel on the effects of Nuclear war. The talk summarizes the input, the methods and the conclusions of different studies to understand better the severe consequences of nuclear use. Key questions are: Are the earlier studies still compatible with the current possible scenarios? Is there a need for more research on the issue? What are the conclusions of states and relevant international organisations?