Česká společnost pro ochranu před zářením

Výbor České společnosti pro ochranu před zářením, z.s., si Vás dovoluje pozvat na seminář, který se uskuteční v zasedací místnosti Státního ústavu radiační ochrany, v.v.i. dne **19.5.2022** od **13 hodin**.

Účast na semináři bude možná i on-line formou:
https://cesnet.zoom.us/j/95110485950?pwd=aS94MTRNSmx2VTJKVHhnWnNXTjZ6UT09

Program:

Dr. Eric Benton 13:00 - 13:40 + diskuze

přestávka 13:50 - 14:00

Dr. Guenther Reitz 14:00 - 14:40 + diskuze

Atmospheric Ionizing Radiation Environment (AIRE) Institute

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The Atmospheric Ionizing Radiation Environment (AIRE) Institute, headquartered at Oklahoma State University, is the first research and education institute in the US focused primarily on the study of the on the Steady State Atmospheric Ionizing Radiation Environment (SSAIRE), its effects on life, on our technological infrastructure and on the environment. In addition to furthering our understanding of the fundamental physics underlying the SSAIRE, our research emphasizes development of ionizing radiation detectors for use in the atmosphere and on the ground, and on developing and refining computer models of the SSAIRE. Our educational mission is focused on informing the scientific community, the aviation community and general public about the SSAIRE and its effects on life, the larger environment and technology. In addition to low cost ground-based detectors to measure the fluxes of secondary cosmic ray neutrons and muons, the AIRE Institute is developing a range of instrumentation suitable for atmospheric dosimetry including the Atmospheric Ionizing Radiation Tissue Equivalent Dosimeter (AirTED). The institute has also developed AIREC, a compact, stand-alone computer model capable of estimating the energy spectra and flux of the major species of ionizing radiation produced in galactic cosmic ray

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(GCR) induced atmospheric air showers as functions of altitude, geographic (geomagnetic) coordinates and solar epoch.

Impact of the ICRU concept of new dosimetric quantities on Aircrew and Spacecrew dosimetry

Guenther Reitz

Operational quantities recommended in ICRU report 39/51 provide an acceptable estimate of the protection quantities especially for does below dose constrains and significantly below dose limits. For doses which approach or exceed limits more precise information is necessary to estimate protection quantities better. The operational quantities have several inconsistence and limitations, as a consequence of their respective definitions. One major issue beside others is the use of ambient dose equivalent H*(10), because the ICRU sphere has no resemblance to the reference andromorphic phantoms used to calculate the protection quantities. Quality factors and weighting factors are based on different concepts for the definition and measurement of radiation effectiveness. Consequences are poor estimates of the radiation protection quantities for several exposure situations. Therefore ICRU Report 95 (ICRU, 2020) has recommended new operational quantities. The main philosophical change is that the operational quantities are now defined as the product of fluence at a point in space with conversion coefficients that are defined in the same anthropomorphic phantoms that are used to calculate the protection quantities. Furthermore the range of radiation energy and types are extended for which conversion factors are available. This was done as it provides a better estimate of the protection quantity in civil air flight and space dosimetry. This presentation describes the results of exploring the consequences of introducing the proposed quantities especially in the area of civil air flight and space as well as its benefits and drawbacks.

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