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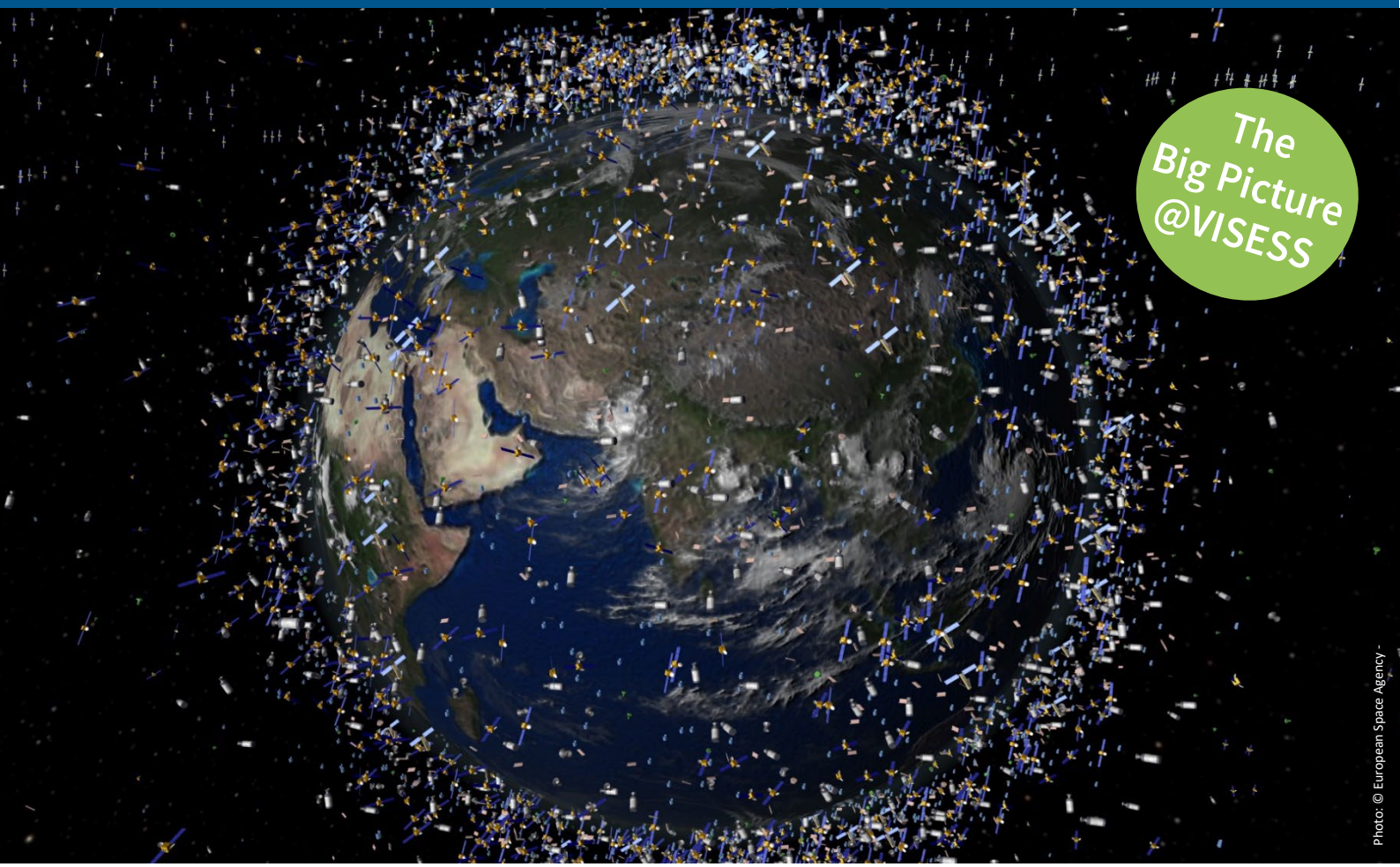
Graveyard of Space Technology – The Problem of Space Junk

„As is true for many environmental problems, the control of the orbital debris environment may initially be expensive, but failure to control leads to disaster in the long-term.“ (Donald J. Kessler)

Thursday, 23 February 2023, 17:00 (CET)
UZAII Lecture Hall 3 (2A211) and Online



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Big Picture Talk:
Graveyard of Modern Space Technology – The Problem of Space Junk

Event series of Vienna International School of Earth and Space Sciences (VISESS)

The Space Age, a new chapter in human history opened with the launch of Sputnik 1 satellite in 1957. Fast forward to 2023 and the number of operating satellites is steadily rising towards 10,000. Given the vastness of space, it is hard to imagine that man-made objects could reach numbers high enough to disturb Earth's orbits to such a degree as to jeopardize our daily lives and the future of space exploration. With the modern space race under way Earth's orbits will only become more "congested, contested and competitive." The consequence of such actions gives rise to space debris – any object of human origin, beyond anyone's control – with the potential to damage or destroy upon impact. In 1978, a NASA expert, Donald J. Kessler, predicted that past a certain critical point, the amount of space debris will keep on increasing exponentially. What are the dangers posed by space debris? Is it an issue that should concern us? Can we simply clean up space?

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17:00–17:05	**Welcome** **Alvaro Hacar Gonzalez (VISESS)**
17:05–17:35	**What is Space Debris?** **Michael Steindorfer (Austrian Academy of Sciences)**
17:35–18:05	**Cleaning up Space** **Antonio Caiazzo (ESA Clean Space Office)**
18:05–18:35	**Legal Aspects of Space Debris** **Annie Kazarjan (University of Vienna)**
18:35-18:50	**Break**
18:50-19:30	**Panel Discussion: The Future of Space Debris** **Moderation: Agata Wisłocka (University of Vienna)**

Michael Steindorfer is the leader of the Satellite Laser Ranging group at the Institut Für Weltraumforschung in Graz. He completed his PhD in Physics at the Karl-Franzens University in Graz in 2014. He continued his work at the Institut für Weltraumforschung, where he became leader of the Satellite Laser Ranging group in 2022. With his team, he tracks the distance to satellites and space debris as part of the International Laser Ranging Service.

Antonio Caiazzo is a Space System Engineer support to the ESA Clean Space Initiative and Concurrent Design Engineering activities at ESA-ESTEC. He achieved his masters in Aerospace Engineering at the University of Naples Federico II and continued specializing in Space Science and Technology at the University of Rome Tor Vergata and the International Space University in Strasbourg. In his current position, he provides support in the ESA studies for In-Orbit Servicing, Space Debris Mitigation and Space Debris Remediation.

Annie Kazarjan is a jurist, focusing on public international law and space law. Annie is currently a PhD student at the European, International and Comparative Law Department of the University of Vienna where she carries out her research on the legal aspects of the overexploitation of the Earth's orbits. Besides her academic concentration, Annie has worked with several international organizations, such as the United Nations, to raise awareness and to build capacity on the subjects of space sustainability and space law.

Agata Wisłocka is in the second year of her PhD, under the supervision of Prof. Oliver Hahn, in the COSMOS branch of VISESS, where she is investigating the behavior of the mysterious dark matter. Her interest in space debris was sparked in 2019, after reading the Doomsday Clock Statement, by the Bulletin of the Atomic Scientists, where the space arms race featured as one of the reasons for moving the Clock's handle closer to midnight. Reading this statement made her very upset and led to her becoming aware of many issues regarding Earth's orbits including space junk.

The Space Junk Group is composed of 6 PhD students part of the Vienna International School of Earth and Space Sciences.

Agata Wisłocka (Cosmos) is in the second year of her PhD, under the supervision of Prof. Oliver Hahn. She is investigating the behavior of the mysterious dark matter.

Gwenaël Van Looveren (Cosmos) is a PhD student in astrophysics. His research focusses on rocky (exo)planets atmosphere and in the influence of the host star.

Vlad Răstău (Cosmos) is in the second year of his PhD, under the supervision of Prof. Franz Kerschbaum. He is studying the outflows of evolved Sun-like stars.

Richard Kramer (Earth) is a PhD student in Seismology. His research is focusing on the application of ambient seismology to environmental problems and monitoring of the subsurface behavior.

Simon Schleich (Cosmos) is a first year PhD student, working on the characterization of exoplanet atmospheres from observations of the James-Webb-Telescope.

Lukas Winkler (Cosmos) is doing a PhD in Cosmology working on numerical modeling of cosmic structure formation.

Photo: Sebastian Voltmer (www.weltraum.com | Insta: @sebastianvoltmer)

THE BIG PICTURE @VISESS

The Big Picture Talk series is organized by VISESS, the “Vienna International Schoolof Earth and Space Sciences”, which is offering an internationally oriented training to current and future doctoral students at the Faculty of Earth Sciences, Geography and Astronomy of the University of Vienna. As humanity is facing grand challenges such as climate change or resource depletion, this doctoral school is addressing these challenges through inter- and transdisciplinary academic research connecting the cosmos with planet Earth, its environment and the anthroposphere. With the Big Picture Talks organized by VISESS-students, the doctoral school aims to present current topics of scientific and societal interest to the public.

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