

WED-ID 1: Plenary Talk

Time: Wednesday 14:00–14:35

Location: ZHG011

Welcome Address by Dr. Wilhelm Kaenders

Plenary Talk

WED-ID 1.1   Wed 14:05   ZHG011

Quantum technologies roadmaps perspective and challenges

— •OLIVIER EZRATTY — EPITA, Quantum Energy Initiative

As quantum technologies are maturing in their respective computing, communications and sensing domains, the challenges ahead to deliver their full potential and promises remain significant. Olivier Ezratty will cast these with showing how science, engineering, economics, and geopolitics are intermingled in this innovation process with both virtuous and side effects. We are parallelizing our validation of the quantum theory at larger scales with scientific experiments, components manufacturing upscaling, stretching the capabilities of enabling technolo-

gies and building complex systems integration capabilities. We also start to look at the environmental footprint of these technologies in the making. It gives rise to new scientific disciplines, new interdisciplinarity challenges from physics to software, many interdependencies, a mix of scientific and experimental questions, engineering and technology development. There are still many unknowns and unknown unknowns. More theoretical and fundamental work is also needed at all layers of the stacks on top of engineering and technology developments. All this process may also lead to unexpected side innovation effects. What is the role of the various stakeholders in that ecosystem? How governments influence the landscape? How science and innovation get funded? How can we sustain a virtuous innovation cycle in the long run?