Sonic boom near field analysis of a Mach 5 wave-rider configuration

The following paper discuss the near field sonic boom results obtained with CFD simulations regarding a Mach 5 wave rider configuration derived from the STRATOFLY heritage. Sonic boom near field have emerged as a vital tool for the mitigation and understanding of the impact of supersonic and hypersonic aircraft configurations. The work done discusses the major consideration in the CFD approach for the flow field simulations in the vicinity of the aircraft, including grid generation techniques based on the NASA sonic boom predictions workshop carried out between 2014 to 2020 and the results obtained for different flight conditions and operations. The near field simulation necessitates of accurate predictions of shock wave propagation generated by the aircraft, employing the high-fidelity numerical schemes and turbulence models. These results will be the input for our propagation tool that manage to propagate the shocks from the aircraft to the ground. This work is carried out within the MORE&LESS project, that is an EU-funded project and has the aim to investigate the environmental impact of supersonic aircraft through multi-fidelity simulations and test campaigns for creating multidisciplinary holistic framework for the evaluation of the future supersonic aircraft, trajectories, and operations.