

# Problems in Acoustics

December 6, 2022



The Czech Academy  
of Sciences

**Strategy AV21**  
Top research in the public interest

Seminar organized in cooperation with Bobcat Doosan

## Program

*The preliminary schedule of the workshop*

9:00 - 9:45 Michal Schmid, Oleksandr Starynskyi :  
**Institute of Mathematics of CAS & Doosan Bobcat s.r.o.,  
Aeroacoustics Cooperation**

*General introduction of the cooperation and aeroacoustic calculations.  
Physical measurement and test bench development.  
Initial CFD simulations and proposed next steps.  
Doosan Bobcat s.r.o. related CFD simulation.*

9:45 - 10:30 Matteo Caggio:  
**Acoustic/viscous splitting**

*We will discuss the acoustic/viscous splitting approach introduced by Hardin and Pope [An acoustic/viscous splitting technique for computational aeroacoustics. Theoretical and Computational Fluid Dynamics, 6:323–340, 1994]. First, we will focus on the physical reasons motivating the proposed splitting, then we will discuss the conservation of sound energy. We conclude by discussing potential applications.*

10:30 - 11:00 Coffee break

11:00 - 11:45 Viktor Hruška:  
**Brief summary of acoustic metamaterials**

*The last two decades were dedicated to intensive research in acoustic metamaterials and wave manipulation connected to such phenomena. The talk will briefly summarize the main concepts, important literature sources and underlying math.*

11:50 - 12:20 Martin Šoltés:  
**Aeroacoustics in Doosan Bobcat s.r.o**

*Introduction into aeroacoustics measurement and issues in construction vehicles. Real physical measurement example and discussion.*

12:30 - 14:00 Lunch

14:00-15:30 Discussion

*This special joint workshop of the working group in fluid mechanics and Bobcat Doosan company (<http://www.bobcatdobris.cz/>) supported by the Czech Academy of Sciences in the framework of program "Hopes and risks of the digital era" of the Strategy AV21*

<https://www.avcr.cz/cs/strategie/vyzkumne-programy/prehled-programu-bckp/1.-nadeje-a-rizika-digitalniho-veku/>

*The workshop will take a place at:*

Institute of Mathematics CAS  
Žitná 25  
115 67 Praha 1  
Czech Republic