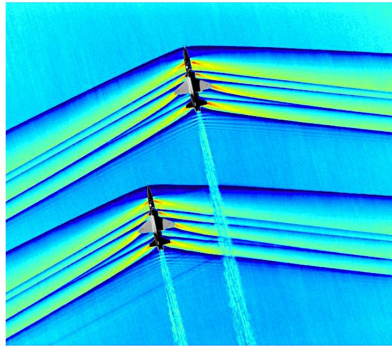
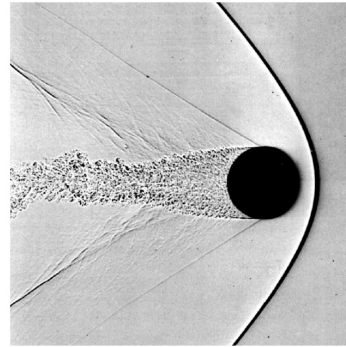


Lecture Announcement Winter Term 25/26

Gasdynamics



a)



b)

a) Schlieren image of shock waves from supersonic jets interacting with each other [NASA].

b) Shadowgraph of an detached oblique shock wave originating from a sphere in supersonic flight [Van Dyke] .

After attending this module the student will understand state-of-the-art concepts and methods of gasdynamics and its applications in engineering sciences. The student will be in a position to analyse complex problems by selecting an appropriate approach to solving the problem and by applying well established solution methods. Additionally, the student will have the ability to transfer the learned skills into solving new problems.

Contents:

- Review of fundamental concepts from fluid mechanics and thermodynamics
- Conservation laws
- Speed of sound and Mach-number
- Normal and oblique shock waves
- Adiabatic flow in a duct with friction
- Flow with heat transfer
- Expansion waves
- Lift and drag in supersonic flow
- Method of characteristics
- Compressible potential flow
- Numerical results

Literature/Teaching Materials: Manuscripts for lecture and exercise will be made available via Moodle. Further literature will be recommended during the lecture.

Prerequisites for Attending: Fundamental of Fluid Mechanics (Grundlagen der Strömungsmechanik), Thermodynamics, ideally also Advanced Fluid Mechanics (Fortgeschrittene Strömungsmechanik).

Dates:
Lecture: Tuesday, 10:15 – 11:45, IC03/112
Exercise: Thursday, 10:15 – 11:45, IC03/112
Revision course: towards the end of the semester

Start of Lectures : Tuesday, 14 October 2025, 10:15, IC03/112

Exam Date and Format: to be announced, oral exam in English or optionally in German