3588 6193 Doctoral student physics - cross wind stability energy requirements Start your mission at DLR  
  
DLR is the research center for aerospace and the space agency of the Federal Republic of Germany. Around 10,000 employees work together on a unique variety of topics in aviation, space travel, energy, transport, security and digitization. Their missions range from basic research to the development of innovative applications and products of tomorrow. Cutting-edge research needs excellent minds at all levels - especially more females - who can fully develop their potential in an inspiring environment. Start your mission with us. For our Institute for Aerodynamics and Flow Technology in Göttingen we are looking for a  
  
Physicist or engineer in aerospace technology, mechanical engineering or similar (f/m/d)  
Investigations of the cross wind stability and the energy demand of vehicles  
  
Your mission:  
  
In the Department of Ground Vehicles at the Institute for Aerodynamics and Flow Technology, we use experimental and numerical methods to research all aspects of vehicle aerodynamics and their air conditioning.  
  
About the background of the doctoral position:  
  
The aerodynamics of a vehicle are relevant to its safe operation in many situations. In practice, in particular, there are often dangers from unsteady aerodynamic phenomena. Examples include the loads induced on objects near the track when a train passes by, or the sensitivity of a vehicle to gusty crosswinds. Although the avoidance of risks in such processes is of general interest, many of the unsteady aerodynamic effects have not yet been explored to a satisfactory extent. It is not easy to predict how a change in vehicle geometry will affect the vehicle's sensitivity to gusty crosswinds, or how, for example, a vehicle's energy consumption will change in gusty wind conditions. In wind tunnel tests with train models, initial tests show that the aerodynamic resistance can increase significantly due to a gusty flow. A strong dependence of the induced loads on the length and time scales in the gusts is observed. However, it is not yet understood how these dependencies come about. This affects both the lateral forces that occur and the additional resistance. For example, it is not clear whether what is happening at the head or the rear of the train is primarily responsible for observed loads. With the planned investigations, the basis should be created so that the side wind stability of the vehicles or their energy requirements can be improved through targeted measures.  
  
Description of the activities in the doctoral project:  
  
In wind tunnel tests, you will expose vehicle models to harmonic disturbances in the inflow and determine the frequency-dependent relationship between the speed fluctuations in the inflow and the resulting pressure and force fluctuations on the model. First you clarify by tests with different train models how strongly the effects depend on the vehicle geometry. You will also determine which processes are responsible for the unsteady forces in the flow around the models. In addition to force and pressure measurements on the models, you will also carry out measurements of the flow field using modern optical methods. Finally, you try to specifically influence the loads caused by gusts on a vehicle with measures such as spoilers or spoiler lip.  
  
Your scientific investigations are to be summarized in a dissertation and completed with a doctorate.  
  
Good academic degree (master/diploma) in engineering (e.g. aerospace engineering, mechanical engineering) or natural sciences (e.g. physics) or other f... Physicist None 2023-03-07 15:57:54.621000