# 1 Introduction

## 1.1 The problem of aerodynamic drag

Dlaczego badamy oraz wzór na opór aerodynamiczny. Że bazujemy na modern exterior balistics i jakieś inne z literatury bo to ładnie brzmi.

## 1.2 Methodology of the present work

For simulations we choose two programs to compare the results. The first one is Solidworks Flow Simulation, in which we also prepared models for simulations. The second one is Ansys Fluent.

First we prepared the models in Solidworks and from there we exported them to .step (214) file format to import them to Ansys. In Ansys we used Fluent with Meshing to prepare the mesh and then we run the simulations. Solidworks Flow Simulation was also used to prepare the mesh and run the simulations, which we later compared with Ansys Fluent results.

All models were tested using Parametric studies/sets for 9 different velocities from 0.1 to 1.0. The resulting graphs of drag coefficient vs mach number were compared and analyzed.

## 1.3 Tested models

R6-Endcone, R6-No-Endcone, PrawieR5

# 2 Upgdated R5 model

- Domena i mesh
- Kolorki dla 0.2, 0.5, 0.8
- Wykres CD

# 3 R6 Endcone

## 3.1 Solidworks

- Domena i mesh
- Kolorki dla 0.2, 0.5, 0.8

## 3.2 Ansys Fluent with meshing

- Domena i mesh
- Kolorki dla 0.2, 0.5, 0.8

Wykresy obu na koniec zestawić.

# 4 R6 No Endcone

## 4.1 Solidworks

- Domena i mesh
- Kolorki dla 0.2, 0.5, 0.8

### 4.2 Ansys Fluent with meshing

- Domena i mesh
- Kolorki dla 0.2, 0.5, 0.8

Wykresy zestawić.

## 5 Results and discussion

- Wykresy CD dla wszystkich modeli
- Opis porównania i zestawienie z literaturą