

# Assignment 1

## BEM Wind Turbine

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**Rotor and Wake Aerodynamics**





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# 1

## Introduction

### 1.1. Assignment BEM **BERNAT**

Blabla

### 1.2. Single polar innacuracies **BERNAT**

Chowchow



# 2

## Blade Element Momentum theory

### 2.1. Main assumptions of the BEM theory **NIKLAS**

Perujo

### 2.2. Code flow chart **CARLOS**

CS7. Carlos Simao 7, ô magnifico





# 3

## Results

Describe the initial conditions, table, cool

### 3.1. BEM alligned rotor **BERNAT**

#### 3.1.1. Main outputs **BERNAT**

Angle of attack and inflow angle **BERNAT**  
Axial and azimuthal inductions **BERNAT**  
Thrust and azimuthal loading **BERNAT**  
Total thrust and torque **BERNAT**

### 3.2. BEM yawed rotor **NIKLAS**

#### 3.2.1. Main outputs **NIKLAS**

Angle of attack and inflow angle **NIKLAS**  
Axial and azimuthal inductions **NIKLAS**  
Thrust and azimuthal loading **NIKLAS**  
Total thrust and torque **NIKLAS**

### 3.3. Influence of tip correction **CARLOS**

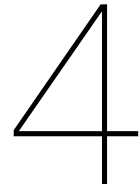
### 3.4. Influence of numerical discretization **BERNAT**

### 3.5. Evaluation of stagnation enthalpy **CARLOS**

### 3.6. System circulation and vorticity **CARLOS**

### 3.7. Operational point **NIKLAS**





## Optional

### **4.1. Explanation of the design approach used for maximizing the Cp or efficiency**

Blabla

### **4.2. Plots with explanation of the new designs**

Rick Sanchez



# 5

## Conclusions NIKLAS

SHORT discussion/conclusion, including the similarities and differences between the two rotor configurations (yaw vs. aligned rotor ), flow field and operation



# Bibliography