# HAWK:
# How to improve the accuracy by aligning the sensor and glider axis

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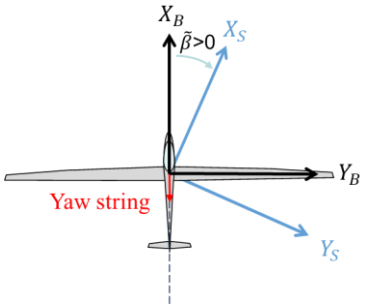



HAWK

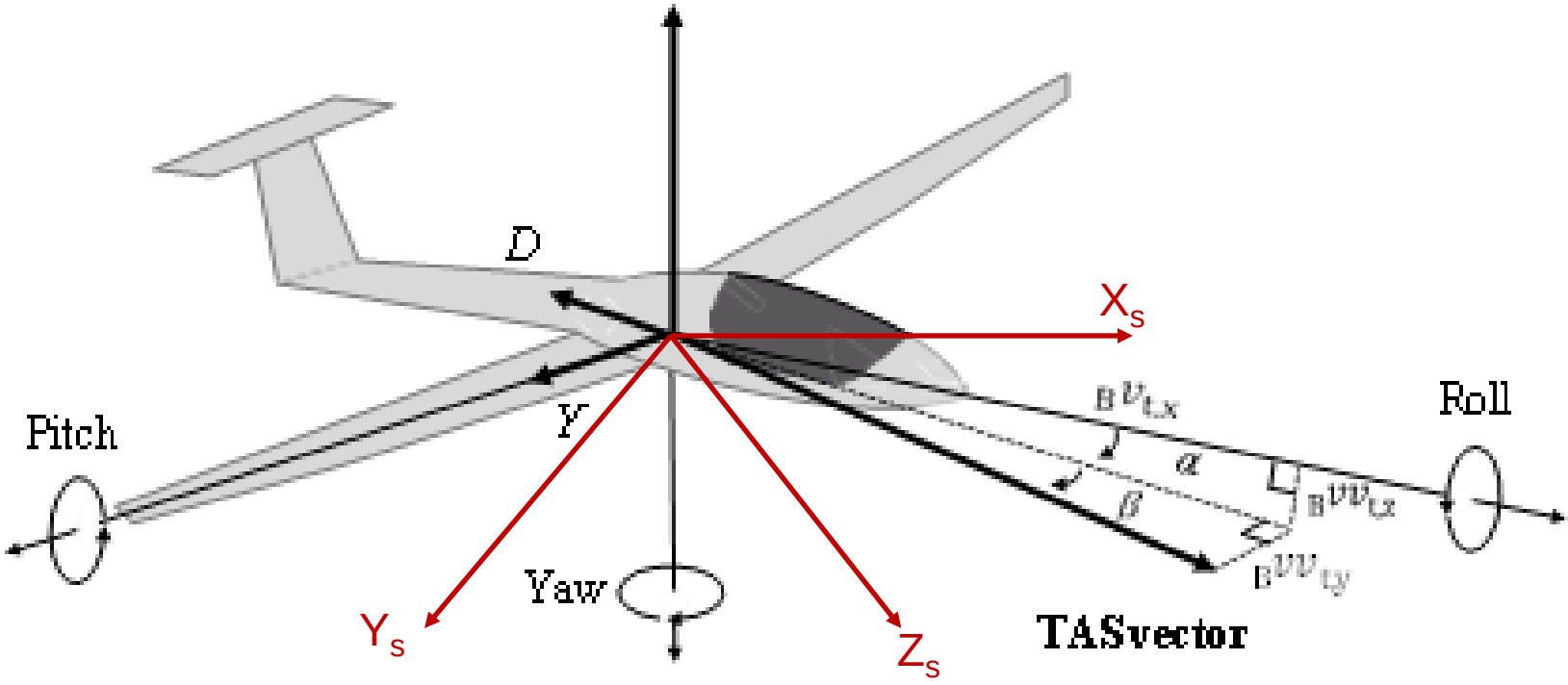
# Offset angle between sensor and glider reference axis

- **Problem Statement**

- **If you observe a large asymmetry between the left and right circling of the average climb rate, the reason might be an offset angle between the sensor axis and the x-glider reference axis.**

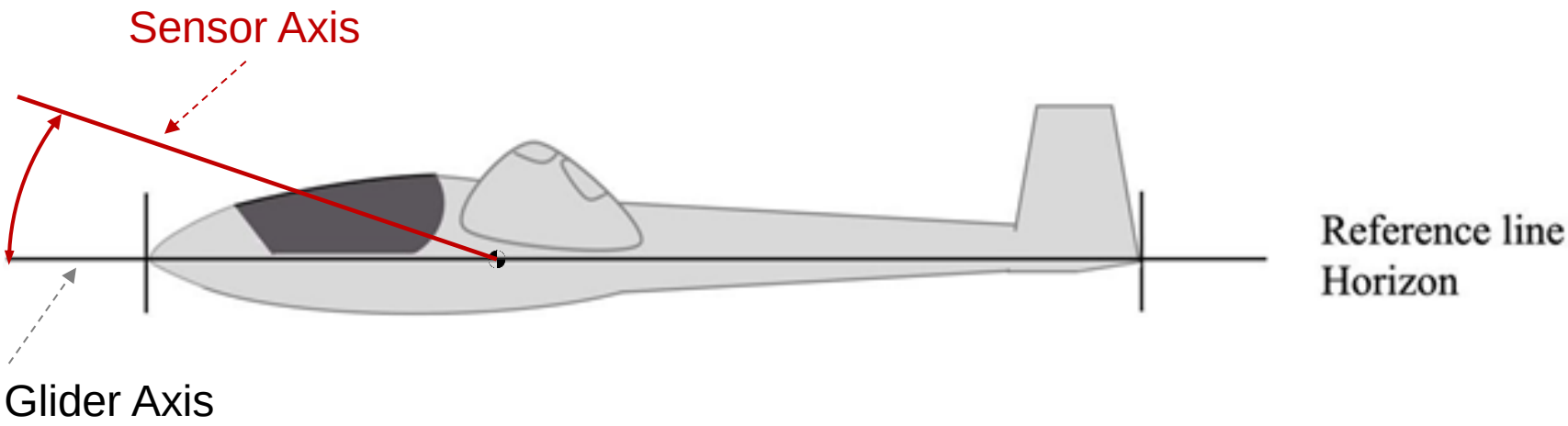
# Glider and Sensor Box Axis

$F_S$: Sensor Frame

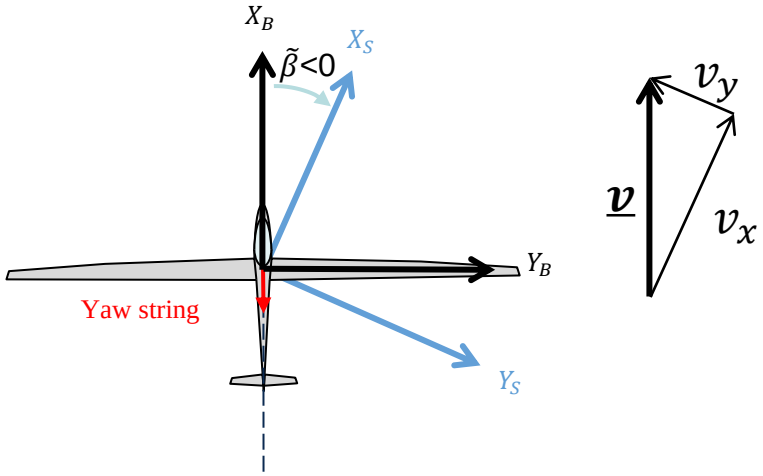



$F_B$: Body Frame

# Pitch Leveling

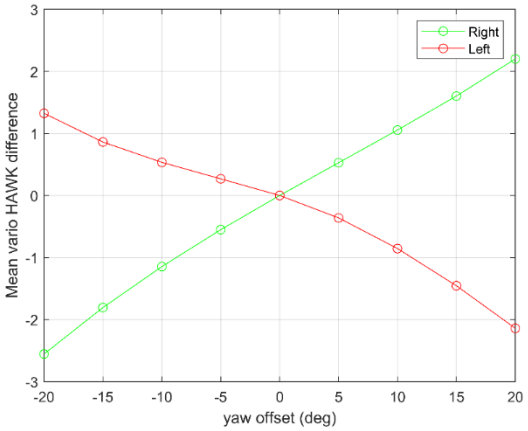


# Mismatch of the sensor axis and glider axis




- Assume the yaw string is centered. The average side slip angle should therefore be zero.
- But the algorithm erroneously assumes that the sensor axis and the glider axis are aligned.
- It therefore computes a nonzero sideslip angle in case of the mismatch.

# Difference of the climb rate in left and right circling




**Horizontal axis: Rotation angle of the sensor axis**

**Vertical axis: Difference between correct vario and vario with rotation**

**Example: For an angle of +5 degrees the HAWK vario shows either a too large or a too small reading of 0,5 m/s**

# How to compensate the yaw offset

**You can determine and compensate the offset as follows**

- **Cruise with the yaw string centered**
- **Observe visually (activate NAV box avg. sideslip) if there exists a nonzero sideslip angle**
  - **If the value is positive (+) set the compensation value to the negative (-) of this value**
  - **Vice versa: If the value is negative (-) set the compensation value to the positive (+) of this value**
- **Repeat the procedure by changing the compensation value in small increments until the result is satisfactory.**

# Screenshot of set up pages