


# 6. Ship Wakes: Opposition

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## 6. Ship Wakes

The **wave pattern** produced by a ship **moving on the water** is **visually similar** to a **Mach cone** and depends on **various parameters**. Investigate the effect.



# Theory



- Many wave equations and explanation of simple waves
- Mention Dispersion



- Wrong explanation of the effect
- Should not use Mach angle approximation
- No Explanation of the effect of dispersion in ship wakes
- Mention a constant

# Experiment



- Include different velocities of the boat
- Different lengths of the boats



- No taking into account the length of the boats
- No explanation of the considered constant wavelengths



# Results



- Calculated error
- Fitted the experimental data with a model
- Correlation between theory and experiment



- Did not show the Kelvin-Mach transition of the wake
- Not all results are explained by the considered model



# Questions for Discussion



- Do you think this **speed of water** is **constant** or does it **depend** on some kind of parameter?
- The envelope line of the **Mach cone** is created by the boundary of **air and created vacuum**, but the shape of the Ship wake is created by the boundary of water and water. Did you consider that, and do you think that can affect your theory?
- Sound waves are created by difference in pressure of air, however water is **incompressible**. So what is the **main** difference in the pattern of the wake from the Mach cone?



# Questions for Discussion



- Are these the **full formulas** for water **dispersion relations**?
- Do you think that the **gravity waves** model holds of **all sizes and speeds** of ships?

# Thank You!

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