

## Master thesis (M.Sc.)

### Development of a pre-mission ballasting algorithm including a ballasting scale for an autonomous underwater glider

Underwater gliders are autonomous underwater vehicles that generate propulsion through small changes in volume. To ensure that these systems glide efficiently and collect data over long periods of time, a highly precise adjustment of the hydrostatic conditions is required prior to each mission. Since this process is very laborious and time-consuming when performed manually, the present thesis aims to develop a ballasting algorithm for an underwater glider as well as the necessary hardware for partly automated pre-mission ballasting.

The following points are to be addressed in detail:

- In-depth study of the hydrostatics of underwater gliders
- Literature review of existing systems
- Development of a calculation routine and software implementation of a ballasting algorithm
- Development and design of a ballasting scale
- Definition of a standardized ballasting procedure using the developed hardware and software
- Construction of a functional demonstrator and experimental validation
- Documentation of the investigations as well as presentation and discussion of the results

The written report must be submitted before the end of the allotted working period. The results of the work are expected to be presented in a colloquium in a 20-minute oral presentation and subsequently defended in a discussion.

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