

Internship - Modeling the vibro-acoustic behavior of submerged structures

Objective: Study the acoustic radiation of a submerged cylindrical shell close to the sea surface.

Noise and vibrations are of first importance for an underwater vehicle. The prediction of its vibro-acoustic behavior by analytical or numerical models is of strong interest for the industry. An underwater vehicle can be modeled by a cylindrical shell coupled to water. The vibro-acoustic response of a submerged cylindrical shell is well known when the surrounding fluid is infinite. However, only a few studies in the literature have presented results when the cylindrical shell comes closer to the sea surface. In this situation, the acoustic waves can interact between the surface and the structure and modify the vibrations and the radiation of the cylindrical shell.

In the acoustic department of Naval Group Research, the internship consists in studying the vibro-acoustic behavior of a submerged cylindrical shell close to the surface in order to have a better understanding of the underlying physical phenomena. To achieve this, the literature will be studied and analytical and numerical model will be developed.

The tasks are:

- Literature survey and use of previously developed models
- Development of an analytical method to take into account the effect of the sea surface
- Development of numerical models with COMSOL Multiphysics
- Understanding of the physical phenomena
- Application to academic test cases
- Summarize the developments and results in a report

The applicant must be a second year master student, in mechanical engineering with preferably an emphasis on acoustics and structural dynamics. The applicant should have the following skills:

- Well organized
- Autonomous at work
- Technical and scientific rigor
- Analytical mind
- Matlab skills
- Interest for research

Type of contract: Paid internship

Duration of the contract: 6 months, starting between February and April 2019.

Location: Ollioules, France

To apply send a CV and motivation letter to Valentin Meyer (valentin.meyer@naval-group.com) and fill the form on the following link <https://www.naval-group.com/fr/talents/nos-offres/liste-des-offres/?idOffre=21969&idOrigine=502&LCID=1036> by clicking on “Je postule à cette offre” (in French only).