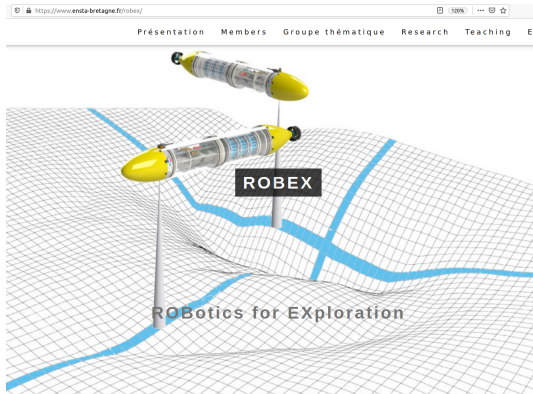


Navigation sous-marine autonome: Partenariat Polytechnique - ENSTA Bzh

L. Jaulin, and E. Goubault

Réunion SENI
En virtuel le mardi 8 décembre 2020





Head of ROBEX Team of Lab-STICC
<https://www.ensta-bretagne.fr/robex/>



Member of the group *Robotique* of ENSTA-Bretagne (Head: F. Le Bars)

<https://www.ensta-bretagne.fr/rob/gth/>



Co-Head (with B. Zerr) of the teaching department *Robotique Autonome*

<https://www.ensta-bretagne.fr/sperob/>



Member of the group
Sûreté de Fonctionnement des Systèmes Robotiques Complexes

(AID, Chaire ISC, Head: E. Goubault)
Objectif: Validation sur systèmes réels.

Docking

System: $\dot{\mathbf{x}} = \mathbf{f}(\mathbf{x}, \mathbf{w}, \mathbf{u})$

Sensors: $\mathbf{y} = \mathbf{g}(\mathbf{x})$

Input: $\mathbf{u}$

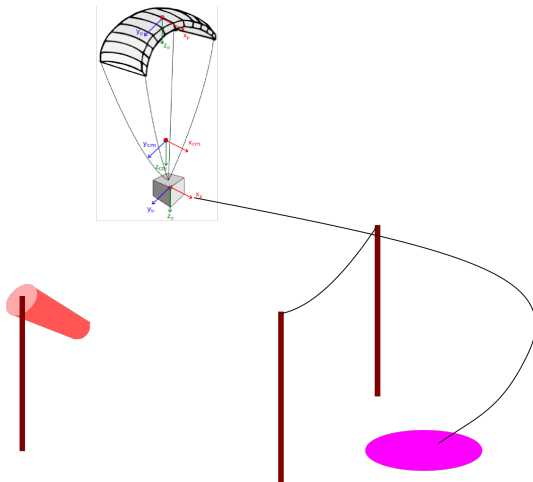
Perturbation: $\mathbf{w}$

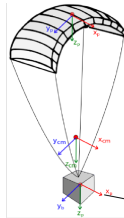
Controller: $\mathbf{u} = \mathbf{r}(\mathbf{y})$

Target: $\mathbb{T}$

Obstacles: $\mathbb{O}$

Initial set: $\mathbb{X}_0$







Experiment with Eole [1]

youtu.be/L04n5RVhgAc

Sur ce domaine, thèse d'Auguste (CIFRE Forssea) :

https://www.ensta-bretagne.fr/jaulin/thesis_auguste.html

Safe and Collaborative Autonomous Underwater Docking

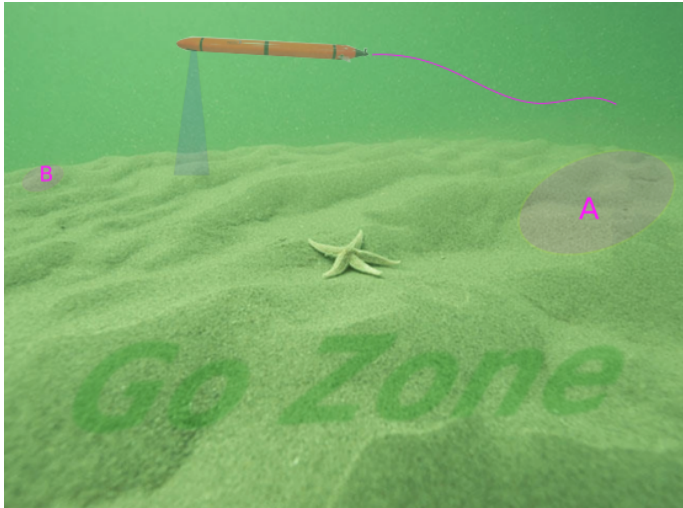
20 Janvier 20, 10am

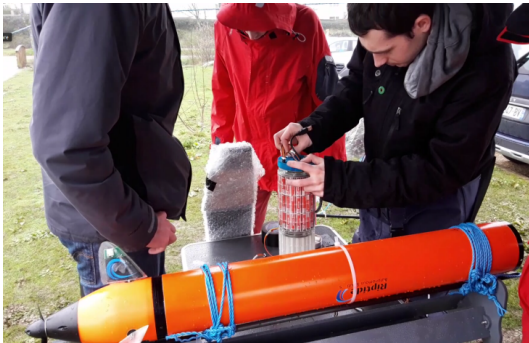
Collaboration Forssea+ENSTAB+Auguste possible sur le docking.

Cycles

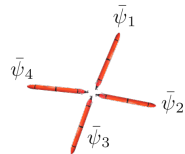
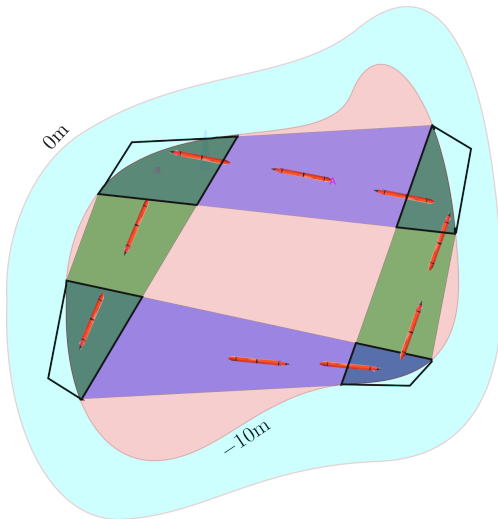


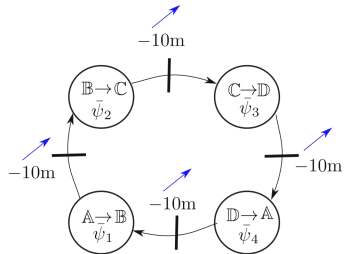
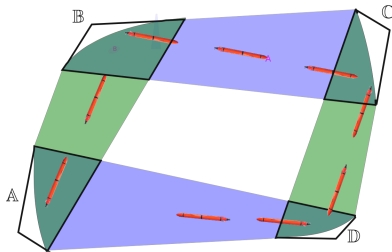
youtu.be/L04n5RVhgAc

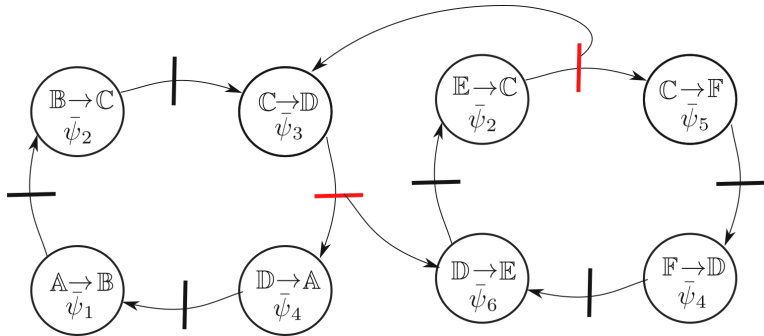




youtu.be/L04n5RVhgAc[3]









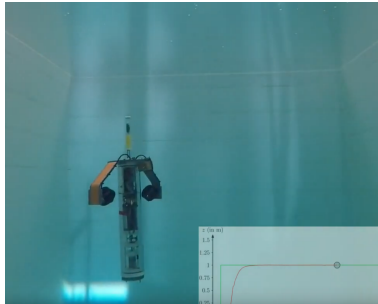
Submeeting, here with Kopadia

[Submeeting 2018](#)

Collaborations possibles :

- Exploration sous la banquise avec Peter Sutherland (Robex-Ifremer, ERC)
- Financement de matériel dans le cadre de la thèse de Maria Luiza (Chaire ISC)

Floats



Thomas Le Mézo (thèse soutenue en 2019)[5]
https://www.ensta-bretagne.fr/thesis_thomas.html
youtu.be/9xGeTaG2exk

Collaboration possible : Groupe de flotteurs en mer.

Cordelière





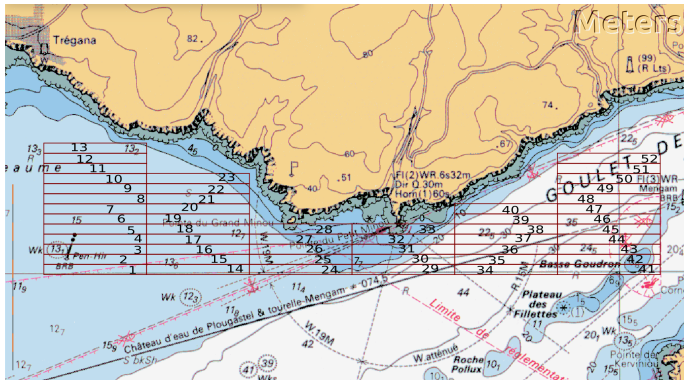
cordeliere.html

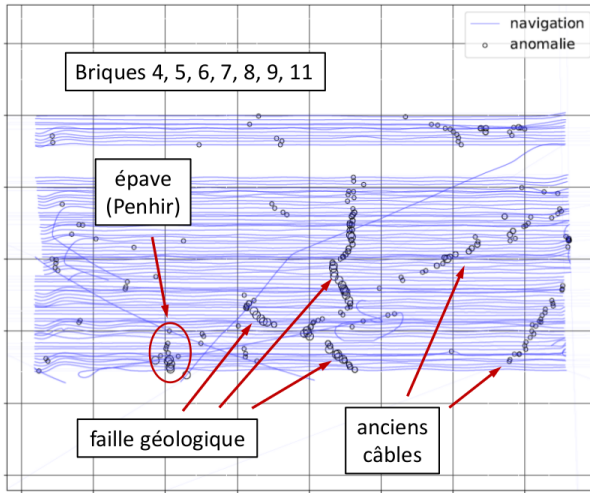
youtu.be/KXHyYeWYGOI





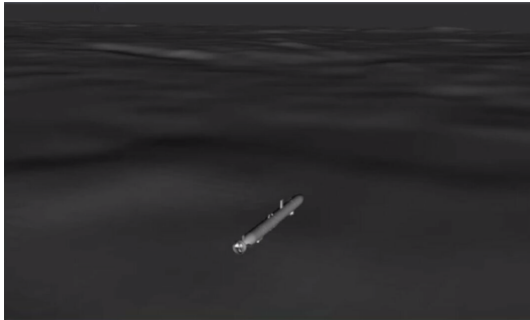
[boatbot.html\[2\]\[6\]](#)





Collaboration possible : DRASSM + Shom + ...

Simulator



youtu.be/YAkUw1ggCvg

Collaboration possible : Toulon + Naval group + DGA-TN + ...

Vaimos



youtu.be/XxQ_KWI1q74

Avec F. Le Bars, O. Ménage, P. Rousseaux (Ifremer) [4]

Collaborations possibles : Groupes de robots voiliers (avec Christophe Viel ?)



Kevin Bedin.

Réalisation d'un parachute autonome.

Projet de fin d'études, ENSTA-Bretagne, Brest, France, 2020.



M. Le Gallic, J. Tillet, L. Jaulin, and F. Le Bars.

Tight Slalom Control for Sailboat Robots.

In Sophia Schillai and Nicholas Townsend, editors, *Robotic Sailing 2018*, pages 87–93, 2018.



L. Jaulin.

Naviguer comme les polynésiens.

Interstices, 2019.



L. Jaulin and F. Le Bars.

An Interval Approach for Stability Analysis; Application to Sailboat Robotics.

IEEE Transaction on Robotics, 27(5), 2012.



T. Le Mézo, G. Le Maillot, T. Ropert, L. Jaulin, A. Ponte, and B. Zerr.

Design and control of a low-cost autonomous profiling float.
Mechanics and Industry, 21(5), 2020.



J. Tillet, L. Jaulin, and F. Le Bars.

Non-linear control under state constraints with validated trajectories for a mobile robot towing a trailer.
In *IROS 2020*, Las Vegas, 2020.