



INTERNSHIP PROGRAM FOR INTERNATIONAL STUDENTS

INTERNSHIP SUBJECT FORM

Name of the Host Laboratory	LadHyX
Website of the Host Laboratory	https://www.ladhyx.polytechnique.fr/fr/
Research Group	
Internship Supervisor	Camille Duprat, Xavier Amandolese, Sophie Ramananarivo
Internship Subject	Wind effects on fog net harvesters
Student's level	<input type="checkbox"/> Advanced Undergraduate Students (3 rd or 4 th year) <input checked="" type="checkbox"/> Master's students (1 st or 2 nd year) <input type="checkbox"/> PhD students
Proposed Duration	<input type="checkbox"/> 3 months <input checked="" type="checkbox"/> 4 months <input checked="" type="checkbox"/> 5 months <input checked="" type="checkbox"/> 6 months
Prerequisites	solid background in fluid and solid mechanics, a great interest in experimental and modeling.
Internship description (max. 15 lines)	<p>Fog harvesting is an alternative method to collect fresh water in arid, mountainous regions where water is scarce but fog abundant. The fog droplets are captured with a porous net placed in the path of the wind. This simple technique allows for a local, sustainable and cheap water production, for uses in irrigation or re-forestation. However, the efficiency of such devices is poor, and highly depends on the weather conditions; in addition, the nets are fragile and do not resist to high winds. Many fundamental questions remain unsolved, in particular about the aerodynamic and aeroelastic characteristics of these porous structures made of flexible wires. The aim of this internship is to perform wind tunnel tests on various porous net configurations (including configurations with “frozen” droplets arrangement), in order to assess the wind loads, net deformation and potential aeroelastic behavior, in smooth or turbulent wind. In addition, we also would like to focus on the validation of simple fluid- elastic models. This internship, potentially followed by a PhD, is part of a larger development project bringing together wire makers, textile manufacturers, structure engineers and a NGO.</p>