



<b>SUPERVISOR INFORMATION</b>	
First and Last name	Elsa Caetano
URL of supervisor webpage	<a href="https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=211263">https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=211263</a>
Department	Civil Engineering
Field(s) of research	Cable vibrations; Bridge structures; Health Monitoring; Damage identification; Wave propagation
<b>PROJECT PROPOSAL</b>	
Title (optional)	Wave propagation methods for localized detection of damage in cables.
Brief project description	
<p>The characterization of the structural condition of cables is frequently made through the assessment of the installed force. However, given the capacity of force distribution within a strand and even within several cables, this technique may not express the whole extension of damage.</p> <p>Therefore, other damage indicators may be necessary to assess the condition of cables. One such example is the characterization of bending stiffness. The existence of broken wires in a cable may lead to reduced bending stiffness and could be approached directly from the regression of the dispersive curves relating the cable properties and force with the velocity and phase of wave propagation.</p> <p>The project aims at developing high-fidelity models of a cable and simulating the effect of broken wires, while at the same time assessing the effect on the bending stiffness of a cable between two sections using wave propagation methods.</p>	