



SUPERVISOR INFORMATION	
First and Last name	Elsa Caetano
URL of supervisor webpage	https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=211263
Department	Civil Engineering
Field(s) of research	Footbridge Dynamics; Lightweight Structures; Pedestrian-Induced Vibrations
PROJECT PROPOSAL	
Title (optional)	New generation of recommendations for dynamic design of footbridges
Brief project description	
<p>Following the pedestrian-induced vibration events at the Solférino and the Millenium footbridges, extensive research was conducted worldwide, resulting in well-known recommendations for the dynamic design of footbridges [Setra, 2006; HIVOSS; 2008]. Such recommendations proposed load models and comfort criteria and addressed the "lock-in" phenomenon in particular. They have been followed in many countries with a lot of success. Still, some vibration problems in footbridges are in need to be uncovered, such as those associated with lightweight footbridges for which existing load models do not provide realistic estimates of the observed pedestrian-induced effects, or mountain catenary footbridges, which flexibility needs to be addressed, although requiring different criteria than those dictated by comfort. Finally, it has been observed that deterministic crowd load models, as proposed in existing guidelines, may lead to over-conservative design specifications.</p> <p>The proposed project may combine numerical modelling and experimental testing to develop and validate improved design approaches that can easily be translated into guidelines for wide application in design offices.</p>	