Séminaire de mathématiques et leurs applications

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Titre: On the existence and non-existence of bounded solutions of some fourth order ODE's.

Résumé: We consider a fourth order traveling wave equation associated to the Suspension Bridge Problem (SBP). This equations are modeled by the traveling wave behavior on the Narrows Tacoma and the Golden Gate bridge. In the first part of my talk I will prove the existence of homoclinic solutions when the wave speed is small. The proof of this part is very technical. In the second part of the talk, I will discuss the associated fourth order Liouville theorem associated to the problem. I will use basic real analysis to prove non-existence of bounded solutions to the problem and some consequences of the result. If time permits, I will discuss some open problems in this area.