ON LINEARLY COUPLED SYSTEMS OF NONLINEAR EQUATIONS INVOLVING CRITICAL EXPONENTIAL GROWTH

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In this talk we study the existence of positive ground state solutions to the following class of coupled systems

\[
\begin{align*}
-\Delta u + u &= f_1(u) + \lambda(x)v, \quad x \in \mathbb{R}^2, \\
-\Delta v + v &= f_2(v) + \lambda(x)u, \quad x \in \mathbb{R}^2,
\end{align*}
\]

where the nonlinearities \( f_1(s) \) and \( f_2(s) \) have critical exponential growth motivated by a class of Trudinger-Moser inequality introduced by D.M. Cao (1992). Our approach is variational and based on minimization technique over the Nehari manifold.

\footnote{This is a joint work with J.M. do Ó - UFPB}