Mathematical Sciences

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Colloquium Series
Friday, March 3, 2017 at 3pm in Bell Hall 143

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On solutions of some nonlinear Fredholm equations

In this talk, we discuss the existence of solutions to the Fredholm integral equation

$$x(t) = g(t) + \int_0^1 f(t, s, x(s))ds,$$

in the spaces $\mathcal{C}(I)$, $L^p(I)$ $(1 \leq p < +\infty)$ and $L^\infty(I)$. The results obtained seem to be new and improve on known similar results. In particular, we investigate the equation

$$x(t) = \lambda \int_{[0,1]} |\sin(1 + x(s))|ds,$$

and show that some of the known facts about this equation are false.