



Differential Equations and Applied Math Seminar

Dr. Nestor Guillen, Texas State

12-1pm January 20th, 2023

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Title: Approximate Perron Methods

Abstract: First introduced in the context of potential theory a century ago, and later expanded to its full generality by Ishii in the 1980's, the Perron method is an essential theoretical tool used to construct viscosity solutions to nonlinear PDE. In work with Stan Osher and Alex Tong Ling (UCLA), we show the Perron method provides us with a simple principle for the numerical computation of solutions to Hamilton-Jacobi (HJ) equations – as well as any problem admitting a comparison principle, such as obstacle problems or Hele-Shaw flows. Applications include grid-less methods for HJ equations using artificial neural networks or linear bases such as multidimensional Fourier series.

Interested faculty, graduate and undergraduate students are encouraged to attend.