CSUN | CALIFORNIA STATE UNIVERSITY NORTHRIDGE

Interdisciplinary Research Institute for the Sciences (IRIS) Seminar

Friday, November 30, 2018
11:00am – 12:00pm
LO1326

Mathematical and Computational Aspects of Radiation Therapy Treatment Planning

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Abstract:

Radiation therapy is one of the most common treatment options for cancers along with surgery and chemotherapy. The general goal is to kill or control malignant tumor cells. To accomplish this the tumor has to receive sufficient amount of radiation. On the other hand the surrounding tissue and organs should receive low dose to avoid undesired side effects. Commonly a linear accelerator is used to deliver beams of radiation. Treatment planning aims to find beam directions, beam on times, and the shapes of these beams. This problem can be formulated as an optimization problem with a computationally expensive objective function. One possible formulation and how it can be solved will be discussed. Also related imaging, organ segmentation, dose calculation, and motion management problems are briefly described.