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### **Science Driven the Parameters of 4th Generation Light Sources**

JEROME HASTINGS, Stanford Linear Accelerator Center

The scientific challenges that can be best addressed with x-rays and the evolution of accelerator based x-ray sources has focused the attention of the x-ray community on new concepts: using the electron beam once rather than storage rings. We will describe this approach and the photon source properties that result with emphasis on peak and average brightness for the study of structure and dynamics in the chemical, materials and biological sciences. Examples from 4th generation sources planned and under construction will be presented.