

MATHEMATICS DEPARTMENT COLLOQUIUM, CSU

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3PM–4PM RT 502

Mathematical Foundations of Computer Generated Digital Entertainment: An Exposition

Sean X. Chang, DreamWorks

Abstract. The digital entertainment creation process employs a wide variety of techniques for asset generation. These techniques are based upon many commercial software packages and proprietary tools, customized for the specific workflow of each studio. Yet common to every package, tool and technique are the underlying mathematical foundations of computer graphics and simulation, which serve as the cornerstone to the production of live-action digital effects, feature animation, and interactive entertainment. A discussion of a typical industry workflow for film and games is accompanied, each step of the way, by a survey of the most utilized mathematical models. This includes a cursory glance at the modeling, texturing, object articulation, simulation, lighting and rendering aspects of a production pipeline. Example assets from recent, popular games and films serve to illustrate each step and offer incentive to study the underlying theories driving them.

* Refreshments at 2:30 PM in RT 502

¹Note a special day and place!