



# Physics-Based Models for People Tracking: Discussion and Summary

Marcus Brubaker<sup>1</sup> Leonid Sigal<sup>1,2</sup> David J Fleet<sup>1</sup>

<sup>1</sup>University of Toronto

<sup>2</sup>Disney Research, Pittsburgh

# Discussion

---

Inclusion of physics with models for pose tracking and scene analysis

- ensures physically plausible pose and motion estimates
- generalization and optimization from first principles reduce dependence on mocap
- provides a formulation in which interactions are intrinsic

# Discussion

---

## Physics-based approaches

- optimized low-dimensional controllers + kinematics
- data-driven trajectory control

# Discussion

---

Some of the big questions (too many to ask...)

- How much physics – what level of abstraction is effective?
- Do physics-based models for vision need to be as robust and rich as those for synthesis in CG or robotics?
- How can we build controllers that capture a wide range of stylistic diversity (e.g., depending on morphological properties or even mood)
- Simultaneous inference of pose and other parameters in physics-based models
- What's the role of learning and mocap for building useful priors over physics-based models ?

## Special thanks for discussions and materials to:

- Aaron Hertzmann, University of Toronto
- Jessica Hodgins, CMU / Disney Research Pittsburgh
- Odest Chadwicke Jenkins, Brown University
- Martin de Lasa, University of Toronto
- Takaaki Shiratori, Disney Research Pittsburgh
- Cristi Sminchesescu, University of Bonn
- Marek Vondrak, Brown University
- Jack Wang, University of Toronto
- Katsu Yamane, CMU / Disney Research Pittsburgh