From: "NICHOLAS GALLAGHER (RIT Student)"

To: Richard L Garwin / Watson / Contr / IBM@IBMUS

Date: 07/08/2015 06:18 PM

Subject: Thank you so much from an inspired student

Hello Dr. Garwin,

I send this message with the utmost thanks to you. I am a Game Development student at Rochester Institute of Technology, and I love simulation engine programming (and in particular physics engine programming). I have been hired for a research oriented position under Ph.D. David Schwartz to write physics simulation tutorials / examples to distribute to students throughout. I was working on a particularly tricky example- how objects which collide linearly begin to spin, and how these now spinning objects can maintain linear velocity through rolling along the surface of the other.

I had finished the simulation, and all was well- until I introduced bouncing and the most peculiar behavior arose! I thought I must have made a mistake in my simulation, so I double and triple checked all of my work-- alas arriving at the same conclusion.

Finally, I found your paper on the Kinematics of an Ultraelastic Rough Ball and to my surprise the behavior matched what you described perfectly! Sure enough, I lowered the coefficients of friction between the surfaces of my objects & allowed for only partially elastic collisions rather than perfectly elastic collisions, and the behavior returned to normal.

Thank you for publishing that paper and thereby saving me the strife of trying to find my non-existent mistake! You saved an aspiring computational engineer hours of arriving at the same conclusion.

Sincerely your newest fan,

Nicholas Gallagher

4th year Game Design & Development

Rochester Institute of Technology

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