

Meeting: 1003, Atlanta, Georgia, MAA CP B1, MAA Session on My Favorite Demo: Innovative Strategies for Mathematics Instructors, I

1003-B1-481 **Akihiro Matsuura*** (matsu@k.dendai.ac.jp), Ishizaka, Hatoyama-cho, Hiki-gun, 350-0394 Saitama, Japan. *Learning spherical geometry via a new form of juggling on a sphere.*

Ideas in performing arts can have positive impact on classes because of the liveliness they bring. We present a demo which incorporates a new form of juggling called *spherical juggling* to learning spherical geometry. Let us explain this briefly. Imagine a clear vacant globe with a hole aside. We insert balls from the hole and roll the balls on the *inner* surface of the globe (the detail is described in the Proceedings of ISAMA/CTI2004). This juggling has the following properties usable in a classroom. (i) Movement of balls reflects the axiomatic properties of spherical geometry. (ii) The relation between spherical geometry and this juggling is just like the one between Euclidean geometry and usual toss juggling. This correspondence helps to learn both geometries in comparison. (iii) Tangibility based on a real globe and juggling can attract students with the inherent beauty, skill, and entertainment. (iv) Students can be aware of a new connection between mathematics and performing arts. Besides the demo with a real globe, we will present a 3D-JAVA simulator. We will also discuss some problems on putting such performance into a classroom. (Received October 05, 2004)