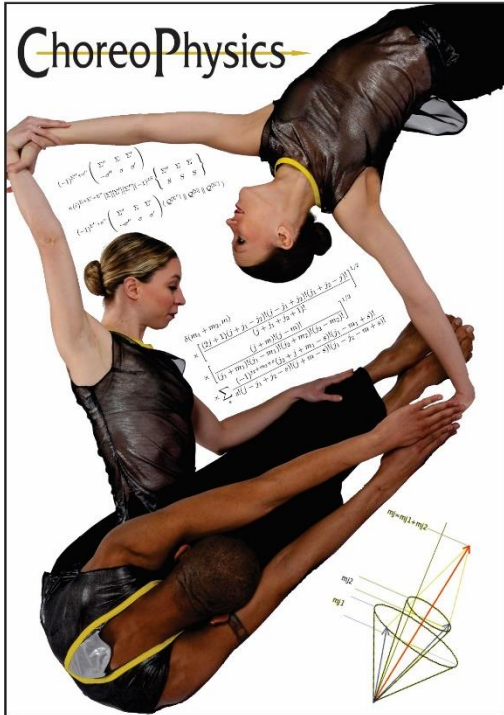




## FINAL REPORT

### *Support for Albany and Schenectady High Schools to attend ChoreoPhysics program*



On Thursday, December 14, 2017, the UAlbany Performing Arts Center offered a morning matinee performance of ChoreoPhysics for area high school students. The program is jointly presented and performed by Professor Keith Earle of UAlbany's Physics Department, choreographer Ellen Sinopoli (this year represented by Sarah DiPasquale of Skidmore's Dance Department) and the Ellen Sinopoli Dance Company.

In 2014, the UAlbany Performing Arts Center facilitated a semester long project that paired Sinopoli and Earle who spent four months exploring the interplay of movement and physics, focusing on a conversation of the arts and sciences while studying side by side the principles of physics and modern dance. They brought students and dancers together in the classroom and the studio to learn and explore. The duo then created work collaboratively that utilizes more than a dozen laws of physics deeply intertwining the science with dance.

One of the products of their collaboration is this program which uses movement

to explore scientific principles studied at the secondary level. Equal parts lecture, demonstration, performance and discussion, it has currently been viewed by over 2500 students from around the Capital Region. The performance program covers core physics principles including vortex shedding, pendulum wave motion, reflection/refraction, centripetal force, symmetry breaking, projectile motion and quantum beats. These are all demonstrated by the dancers, often in concert with students, and then performed by the company in choreographed works. Because of the diversity of topics presented, students taking courses in physics, calculus, pre-calculus, anatomy & physiology, AP biology, and Introduction to Medical Science as well as dance have benefited from the exposure to the program.

This year's performance was attended by Albany, Germantown, Green Tech, Hoosick Falls, Schenectady and Warrensburg High Schools. Thanks to funding from the Dance Alliance, admission costs were covered for the 80 students studying Physics from Albany and Schenectady High Schools. Both schools also received a modest travel stipend.



Dancers & students share the stage during ChoreoPhysics

About the experience, the teachers had this to say:

*“It was a very unique and interesting way to present Physics concepts. Students really enjoyed the part where they or some other students got to go up on stage. Some students liked the fact that they knew who Richard Feynman was when the speaker spoke about him. Another student mentioned later today in my Physics class (we are working on centripetal acceleration right now) that she knew how the tangential velocity vector spins off the circle because she remembered it from today's performance.” ~ Emily Nagle, Albany High School*

*“As a former music teacher and musician, I am really interested in finding a good intersection between art and science. There were some portions of the program that were very good at using the dance moves in a demo environment, for example, the balancing that the students participated in. The discussion of the force balance helped the kids see vectors and Newton's 1st Law in play. It's especially interesting, as there are clearly forces being applied, but no movement. A common misconception is that something "at rest" is experiencing no forces at all while a force always causes motion.*

*My students did mention that they were a little baffled during the portion where the professor was calling Newton's three laws by number during a movement interactions. But that helped generate a good class discussion of why 1 and 3 were always together.*

*Thank you so much for hosting us. The students had a wonderful time and were grateful for the opportunity - one of them even texted that to me afterward.” ~ Ellen Lin, Schenectady High School*



Above: Students look at visual displays of Physics concept in the theatre lobby before & after the performance.

Below: Sarah DiPasquale leads dancers and students on stage in demonstrations of force and balance.



Above: Students from Schenectady High School display some of what they learned in the theatre lounge after the program.