

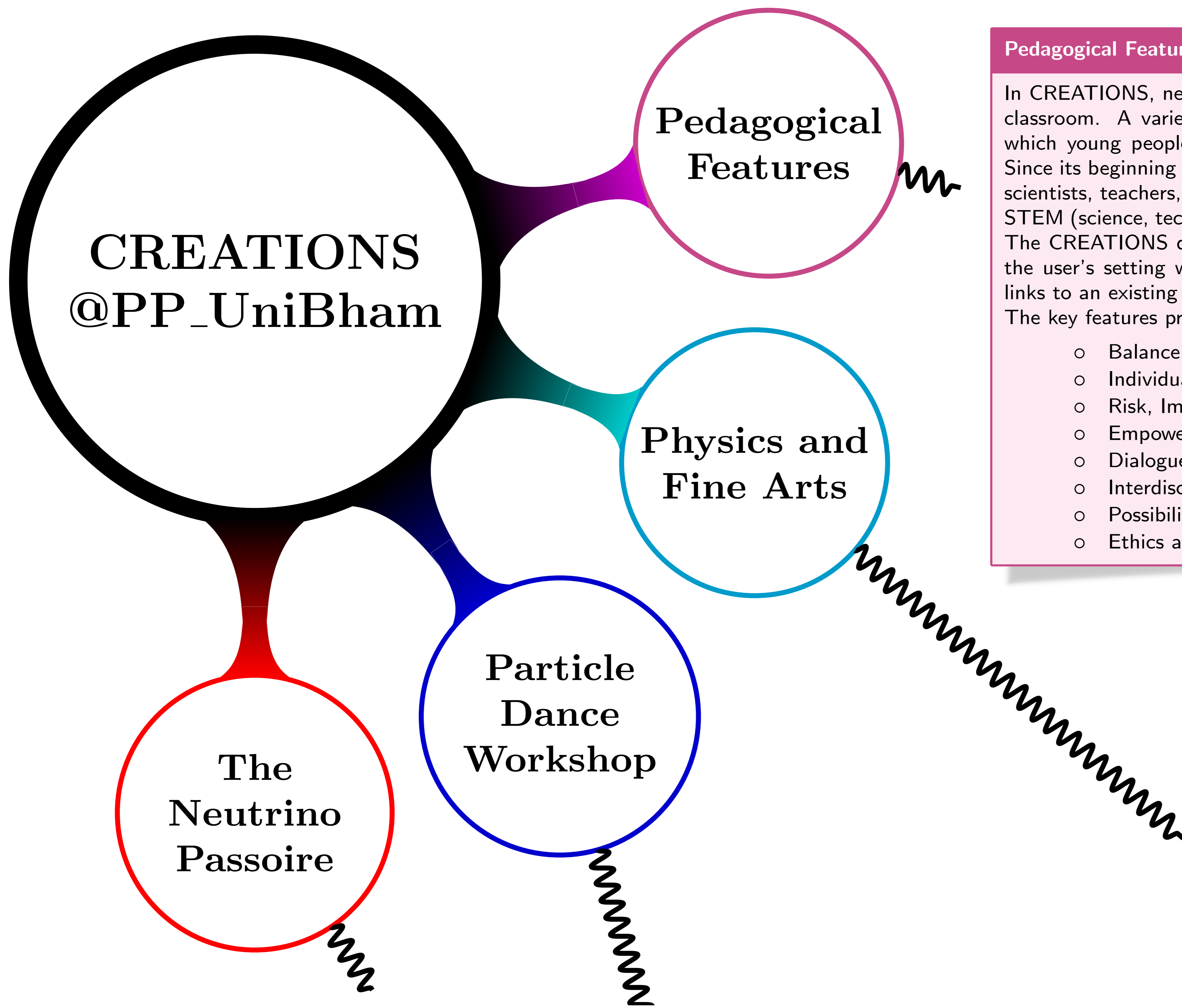


Introducing Students to Particle Physics: Fine Arts and Dance

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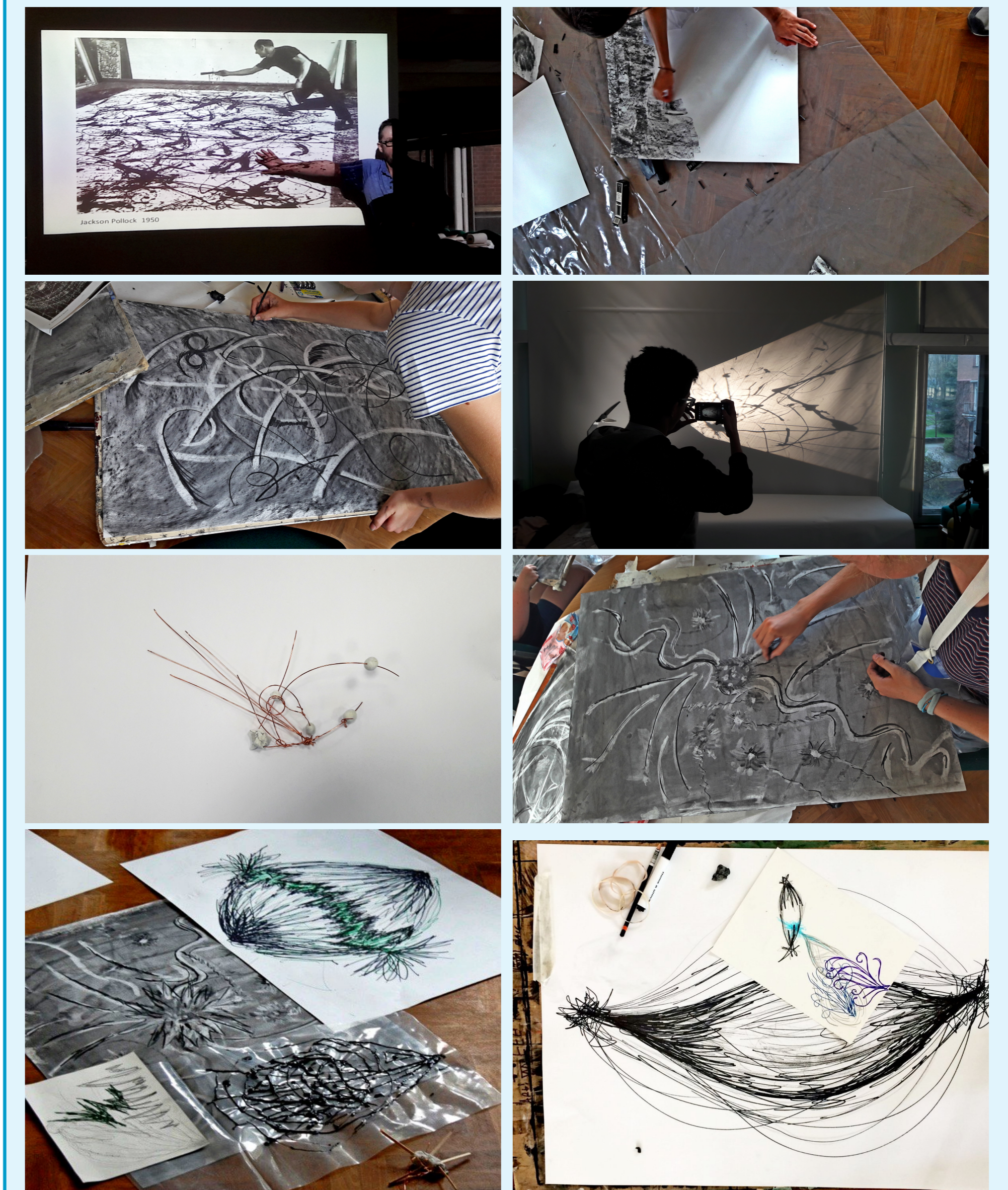
Pedagogical Features

In CREATIONS, new creative approaches are developed based on art for an engaging science classroom. A variety of activities is explored including theatre, photography, exhibitions in which young people can experience an active and playful role within science and research. Since its beginning in October 2015, CREATIONS has established a pan-European network of scientists, teachers, artists and students, with the aim to improve the skills of young people in STEM (science, technology, engineering, mathematics) and to pour talent to scientific careers. The CREATIONS demonstrators, are guidelines for implementing CREATIONS features into the user's setting with links to their resources for planning and implementation as well as links to an existing community on the CREATIONS Portal.

The key features promoted by the demonstrators are:

- Balance and Navigation
- Individual, Collaborative, and Communal Activities for Change
- Risk, Immersion, and Play
- Empowerment and Agency
- Dialogue
- Interdisciplinarity
- Possibilities
- Ethics and Trusteeship

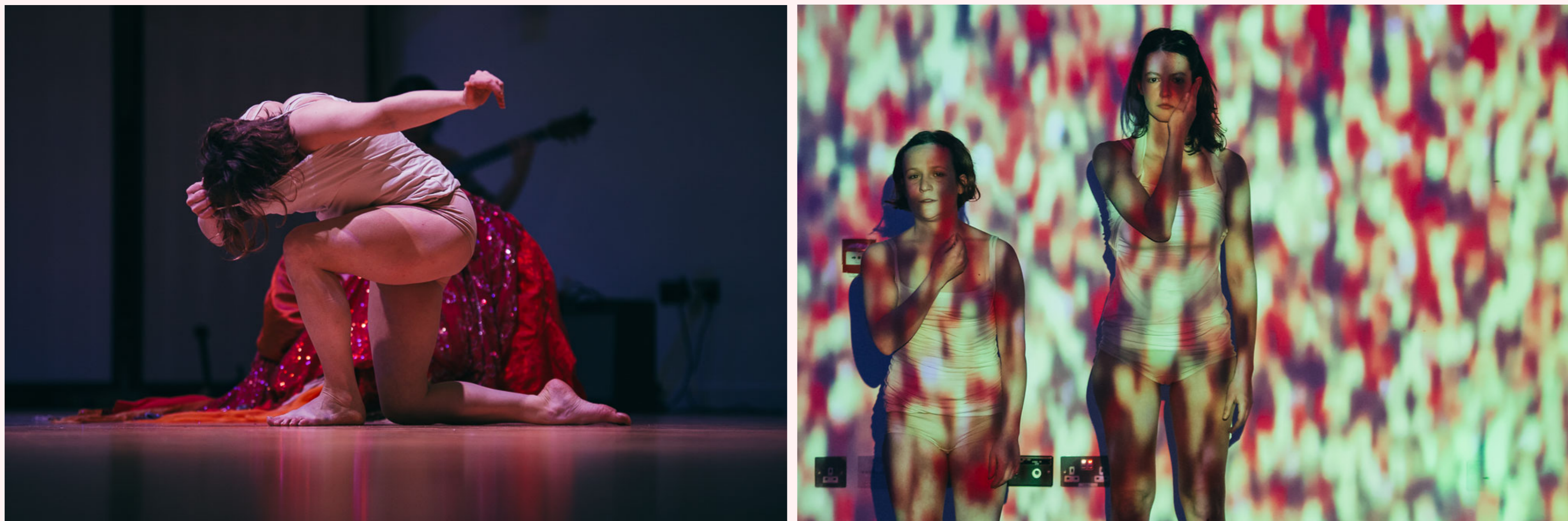
Physics and Fine Arts



Scientific developments have seen reality dissolved into smaller and smaller invisible particles that the physicist has to make visible, a process mirrored by the artist attempting to express thoughts and emotions through the manipulation of materials. Taking the same journey from something hidden to something revealed. Artists Ian Andrews and Sarah Fortes Mayer, alongside particle physicists, have devised ways of visualising quantum activity using mark making activities, simple manipulation of 3D materials and filmed movements. @In_PublicArt



The Neutrino Passoire



The 2015 Nobel Prize in physics was awarded "for the discovery of neutrino oscillations, which shows that neutrinos have mass". The elusive and omnipresent neutrinos are born in the Sun, travelling through space and oscillating between flavours imperceptibly. They pass through matter, the Earth, our bodies, continuing their journey. This performance is a collaboration between particle physicists at the University of Birmingham and dancers Mairi Pardalaki and Fanny Travaglini, alongside musician Katerina Fotinaki. Together they explore the fact that the human body is finally not a fortress as impregnable and over-sacred as we might think; it is rather perceived as a sort of a colander (passoire in French), letting neutrinos pass through without trauma or memory of the event itself. This is a starting point, to question the notion of borders, always relevant, and let the neutrinos give the answers.



Particle Dance



The collaboration initiated in the Neutrino Passoire is extended to the development of a novel demonstrator. The students are introduced through discussion to the Standard Model of particle physics, the particles and their interactions. In a warming-up exercise the students are moving in space, firstly in a circle and then randomly, and interact through the exchange of particles. Subsequently, a movement is associated with each particle, drawing inspiration from its characteristics (mass, interactions), along with a melody and a rhythm. The various pieces are becoming part of a choreography, the particle dance. Finally, the students are split into groups and they develop a choreography, choosing also the rhythm and melody, creatively interpreting an interaction between particles, scattering or annihilation/pair-production. The particle dance is extended and is presented as a whole.

