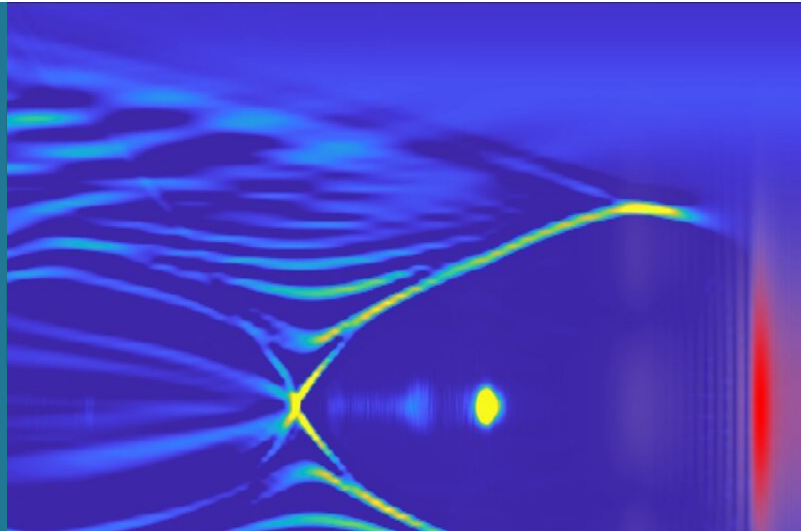


VERITAS

VELOCITY DISTRIBUTION FUNCTION SHAPING OF IONS WITH INTENSE OPTICAL LATTICES



Innovation

The VERITAS project is about using lasers, which are high power light beams, in a specific configuration for the manipulation of motion of charged particles (ions). Due to this light-matter interaction, it is possible to create different phenomena: These particles can for example be accelerated by the lasers so that they achieve higher velocities. On the other hand, deceleration of the particles by the use of the lasers can also be achieved so that the particles are slowed down to a standstill. A third type of interaction that can be envisioned is that a group of ions having an initially large range of velocities, after interacting with the specially structured laser light, can be brought down to a smaller range of velocities, leading towards all ions having only one single velocity in the end.

Impact

All these aspects will provide scientists with novel ways to precisely handle charged particles and will lead to numerous improvements for existing scientific and industrial instruments. For example, it will be possible to perform microscopy imaging of smaller material features with even higher resolution, revealing more details about the structure of these materials. Furthermore, studies about the chemical composition of materials will be improved in order to understand even better of what these materials are made of at a smaller scale. In general, these achieved instrumental optimisations will lead to a globally better understanding and characterization of materials involved in various relevant technologies of today. For example, the functionality of solar panels, batteries, fuel cells or other electronic devices can in this way be even better understood and improved. This will lead at long term to a reduced power consumption of electronic devices, improve the production efficiency of renewable energy devices or lead to more sustainable solutions during the production phase of these devices.

Hence, the VERITAS project can at the end have a considerable impact on energy and environmental related topics, having therefore an immediate impact on the society of tomorrow.

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