UNIVERSITÄT DUISBURG ESSEN

PHYSIK E=

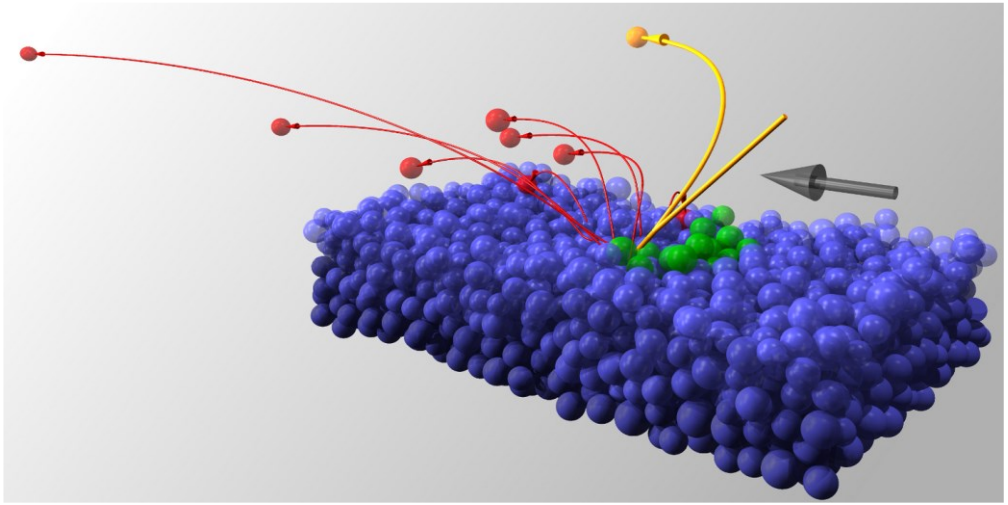
Physikalisches Kolloquium

Mittwoch, 16.7.2014
17:15 Uhr
Hörsaal MC 122

Festkolloquium aus Anlass des sechzigsten Geburtstages von Prof. Dr. Dietrich Wolf

Saltation

Prof. Dr. Hans Jürgen Herrmann
ETH Zürich



Saltation is the jumping motion of sand grains driven by wind. It is the transport mechanism responsible for the formation of dunes. Wind tunnel experiments and recently also numerical simulation have revealed a rich choreography in the granular dance of saltation. There exist three types of grains, those that crawl on the ground, the “creapers”, those that make many small jumps, the “leapers” which form a soft bed floating above the ground and over which jump through mid-air collisions the “saltons” performing huge jumps with high speed. Mid-air collisions thus manage to increase the total sand flux by over a factor of two. Sustained saltation only exists above a certain threshold in wind speed. At this threshold the saturated flux exhibits a jump and one finds a range of metastable saltation with intermittent bursts of activity that are related to the turbulence of the wind. While on Earth this occurs ten to twenty centimeters above the ground on Mars the saltons can attain heights of up to hundred meters.