

Abstract Submitted  
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**Kinetic simulation of the bounce resonance effect in capacitive discharges and beyond**<sup>1</sup> SEBASTIAN WILCZEK, JAN TRIESCHMANN, DENIS EREMIN, RALF PETER BRINKMANN, JULIAN SCHULZE, THOMAS MUSSENBRÖCK, Ruhr University Bochum — The electron heating in capacitive high frequency discharges at very low gas pressures is dominated by momentum transfer from the oscillating sheath. In this regime ohmic heating is not sufficient anymore to maintain the plasma. Under certain electric and geometric conditions highly energetic electrons are able to traverse the plasma bulk and interact with the opposite sheath. For proper frequencies and gap sizes the electrons gain energy, accelerate back and resonantly interact with first sheath. The circle may repeat itself. In this contribution the described bounce resonance effect is investigated by means of Particle-In-Cell simulations. It is found that the effect is connected with the excitation of electrostatic waves and the generation of harmonics in the discharge current. It is shown that it is also connected with a very efficient confinement of electrons.

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