

WHAT CAN BE LEARNED FROM ION TRANSMISSION THROUGH 2D MATERIALS?

CEITEC BUT, S building, large meeting room

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Highly charged ions provide a unique tool for probing the electronic response of solid materials to an extremely strong electric field, the Coulomb field of an approaching highly charged ion. In our experiments we study the ultra-short time response of different 2D-materials like graphene and MoS_2 to an incoming highly charged ion (typically Xe_{40+}). In a multi-coincidence setup we measure the charge state and energy of highly charged ions transmitted through suspended 2D-membranes in coincidence with the number of emitted electrons. This allows us to derive the relevant time scales for charge transfer along the 2D-layer, the resulting current densities in the material and lower bounds for the breakdown currents.



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