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Charged clusters in liquids

We discuss the instability of the water surface in applied vertical electric field induced by the thermal dissociation of molecules. It is shown that the breakdown phenomena occurring as the result of such instability are characterized by two relaxation times. The first one, τ_{jet} , is the discharge time of the surface. The second, T^* , characterizes the process of charge accumulation in the layer near the liquid-vapor boundary. The latter depends on the properties of the diluted charged solution and intensity of the vertical electric field. Since $T^* \gg \tau_{jet}$ it determines the occurring cyclic alternation of the breakdowns. The nature of both times as well as the methods for their measurement are discussed.