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Simulation of partial discharges in voids in insulating materials
REIDAR SVEIN SIGMOND, Phys. Dept. Norwegian University of Science and Technology Trondheim Norway, ALICE GOLDMAN, MAX GOLDMAN, Laboratoire de Physique de Gaz et de Plasma, CNRS France — Partial discharge literature reports that in new voids, the current pulses generated by partial discharges have short rise times, last only a few nanoseconds and generally have a great amplitude. After a given ageing, when the walls are oxidized, the current pulses have a longer rise time, a longer duration and a lower amplitude. The paper presents results obtained for the current pulses by a computer simulation of the equivalent electrical circuit of the whole system (comprising a pulsed power supply, the void and its surrounding dielectric) with "reasonable" ionization coefficients for the development of the partial discharges. Special attention is paid to the role of the void size in the discharge development.

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