## Induced overvoltages in 35 kV and below overhead lines considering the actual form of lightning impulse and its parameters.

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The paper proposes a methodology for calculating induced lightning overvoltages on overhead power lines, developing classical approaches by taking into account the actual shape of the lightning current impulse. A system of wave equations for a multi-conductor line with distributed electromagnetic influence was solved numerically using the finite element method. It was established that, unlike the classical approach that implements a step current impulse model, accounting for the actual shape characterized by the rise time and fall time leads to higher (by 15–20%) estimates of the of induced voltages. Numerical calculations were implemented based on the combined use of standard software tools COMSOL Multiphysics and MATLAB.

Key words: lightning, induced overvoltages, wave equations, multi-conductor power lines.