

## Author Biography

### Paper ID 257: Simulating Negative Corona Inception Voltages at Different Air Pressures



Salman Ali is an Electrical Engineer and PhD candidate at the Universitat Politècnica de Catalunya (UPC), Spain. He is currently working as a Researcher at the High Voltage Test & Research Center, AMBER–UPC, where his research focuses on high-voltage corona discharge, plasma modelling, electric-field analysis, and experimental validation.

His current work involves the development of finite-element plasma models using COMSOL Multiphysics, including charged-particle transport, ionization and attachment processes, space-charge effects, and Poisson-based electric-field calculations. His research also investigates the influence of atmospheric pressure and electrode geometry on corona inception. In his recent work, “*Simulating Negative Corona Inception Voltages at Different Air Pressures*,” he developed a two-dimensional axisymmetric drift-diffusion plasma model coupled with Poisson’s equation and validated the predicted corona inception voltages through laboratory experiments under atmospheric pressures ranging from 100% to 10% of standard pressure. This research has applications in high-voltage insulation design, power-electronic enclosures, renewable-energy systems, and aerospace environments. Whereas, this work is supported by MICIU/AEI grant PID2023-147016OB-I00, co-funded by the European Regional Development Fund (ERDF), “A way of making Europe,” European Union, and by AGAUR (2021 SGR 00392).

His broader PhD research focuses on power electronics, renewable-energy and battery-energy-storage-integrated series-cascaded microgrids, multilevel converters, power routing, and power-flow control. He has experience with MATLAB/Simulink, Typhoon HIL, COMSOL Multiphysics, hardware-in-the-loop testing, and experimental validation. His previous research also includes MMC-BESS, cascaded H-bridge converters, SOC control, and short-term electrical load forecasting.