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SPECIAL SESSION XIV

Lightning:
Detection, Modeling and Protection

ORGANIZED AND CHAIRED BY

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Like other atmospheric phenomena, lightning is intensively studied to mitigate the risk that it represents for human beings, structures, and infrastructures. Although the great interest, lightning process is not completely known today. For this reason, many researchers investigated the lightning physics, proposed sophisticated models simulating the lightning current and electromagnetic fields, and assessed the lightning interaction with power systems. Lightning is object of atmospheric research: several statistical analyses based on data from direct (tower), optical, or far-field measurements evaluated the variability of lightning properties with respect to different geographical, climatological, and temporal parameters. Moreover, some nowcasting methods based on AI have been proposed recently.
Lightning is interest of electric and energy engineering, too. Lightning events represent one of the main issues affecting power systems protection. Numerous models and methods for the characterization of the lightning current and electromagnetic fields were developed with the goal of evaluating the effects produced on power systems, e.g., the over-voltages induced by direct and indirect lightning strikes on power lines or the electromagnetic transient experienced by a struck wind turbine.
A special section in the 24th International Conference on Environment and Electrical Engineering is here proposed to cover many different important lightning-related topics in the areas of detection, modelling and protection. Special section topic is deeply inserted in the two main areas of the conference: the environment and the electric engineering and could represent a source of important scientific contributions able to strongly improve the existing literature.The special session accepts papers based on (but not limited to) the following topics:

- **Lightning physics**
- **Lightning occurrence and statistics**
- **Lightning location, detection and nowcasting**
- **Lightning discharge and attachment process**
- **Lightning electromagnetic pulse**
- **Lightning induced effects**
- **Lightning down conductors and earthing**
- **Lightning protection of power systems**
- **Lightning protection of communications systems**
- **Lightning protection of railway and transportation systems**
- **Lightning protection of renewable energy systems**
- **Lightning protection of civil structures**
- **Lightning protection testing - laboratory experiments**

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