



DIPARTIMENTO DI INGEGNERIA DELL'ENERGIA ELETTRICA
E DELL'INFORMAZIONE "GUGLIELMO MARCONI"

Avviso di Seminario

Scuola di Ingegneria ed Architettura
Viale Risorgimento 2 – Bologna
Martedì 5 maggio 2015 - Aula 5-2 ore 15-18

William A. Chisholm, Ph.D., P.Eng., FIEEE



Dr. William A. Chisholm is a well-known specialist in the effects of adverse weather, including icing, lightning and low wind conditions, on electric power systems. He joined Ontario Hydro Research Division, later Kinectrics, in 1977. He was named an IEEE Fellow in 2007 for contributions to extra high voltage transmission line performance assessment. The same year, he joined the research team at the Université du Québec à Chicoutimi (UQAC) and continues to collaborate on extra high voltage insulation performance in freezing conditions. Lately he has designed a series of new graduate courses at the University of Toronto. He has been a long-term IEEE and CIGRE member, with significant contributions to IEEE 1243, 1410, 1783, P1820 and CIGRE Technical Brochures 299, 440, 549, C4.23 and others as well as serving as Chair of the Power and Energy Society, Transmission and Distribution Committee.

With Masoud Farzaneh at UQAC, he has co-authored three books and also written several book chapters:

- 2012, Electrical Design of Overhead Power Transmission Lines, McGraw Hill
- 2009, Insulators for Icing and Polluted Environments, Wiley/IEEE
- 2008, Atmospheric Icing of Power Networks, Springer
- 2012, Electric Power Engineering Handbook, 3rd edition, CRC Press 2005, 2008, 2009
- Lead author, lightning and grounding chapters, EPRI Red, Blue and Grey books

He prepares a quarterly column, Transient Thoughts, in INMR Magazine.

The proposed seminars will deal with transmission line reliability problems that have reached across several domains of expertise and require analysis using appropriate statistical methods.

Seminar 1: 50 Years in Icing Performance of Outdoor Insulators

The 50th year of the IEEE Dielectrics and Insulation Society (DEIS) was celebrated with a series of invited papers. This presentation is based on the eleventh and final paper. It describes how electrical engineers of the 1960s solved important switching-surge issues for extra-high-voltage systems, but their solutions eventually led to levels of insulator stress that caused operational problems with line voltage flashover, under ice and snow conditions. An accessible presentation of 80-90 minutes, followed by discussion, will be of interest to electrical power system engineering students as well as appealing to specialists in environmental science and meteorology. The organization is as follows:

- Background of IEEE and DEIS
- Compaction of EHV Transmission Line Dimensions in the 1960s
- Operational Problems with Winter Conditions on EHV Lines and Stations in the 1980s
- Targeted Research into EHV Icing Flashovers in the 2000s
- Looking Forward to 2063

Seminar 2: Relevant Aspects related to the Lightning Performance of Transmission Lines

Depending on the audience interest and expertise, three specialized aspects in the lightning performance of transmission lines will be discussed with the desired emphasis:

- Lightning impulse flashover modeling of air gaps and insulators
- Log-Normal Distributions
 - For lightning parameters in CIGRE Technical Brochure 549
 - For grounding results, considering resistivity and tower resistance as log-normal distributions
 - Limitations of validity of the log-logistic approximations
- Improved Concepts for Line Surge Arrester Protection of Transmission Lines
 - History and application experience
 - Coordination of arrester placement with Aeolian vibration damper locations

Some academic preparation in statistics and insulation coordination will be helpful but not essential.