NSERC CREATE **TOP-SET** Un programme *FONCER* du CRSNG

Séminaire

Le vendredi 26 janvier 2024, 10h30
MS Teams
Le séminaire se déroulera en anglais.

Seminar

Friday, January 26, 2024, 10:30 a.m.
MS Teams

Empirical modelling of the solar spectral influence on photovoltaic devices for improved performance forecasting

Rajiv Daxini, University of Nottingham

Abstract: Accurate modelling of photovoltaic (PV) performance can improve system design prior to construction, fault detection during operation, and the grid penetration of PV energy. While models to account for the effects of meteorological parameters such as irradiance and temperature are well established, those for the influence of the solar spectrum (spectral correction functions, SCFs) are limited. Existing SCFs are typically based on proxy variables, which restrict the information contained on the spectrum. This is a particular issue in countries such as the United Kingdom where a range of fast-changing factors, such as cloud cover, influence the spectrum. This work proposes a new SCF based on spectral irradiance measurements. The model is developed and validated using data from two separate year-long experiment campaigns in the United States and United Kingdom. Compared with comparable proxy variable SCFs, the proposed approach cuts the annualised prediction error by up to 60%. This presentation introduces the new model and provides details of the new PV and meteorological monitoring site constructed at the University of Nottingham, data from which will soon be made public.

Bio: Dr. Rajiv Daxini is a researcher in the field of photovoltaics. He earned his PhD on a Faculty of Engineering scholarship at the University of Nottingham in 2023, where his research focused on the role of the solar spectrum in photovoltaic performance modelling. He has (co-)authored four journal papers and one conference paper, including the publication of two new spectral correction functions. During his PhD, he designed and constructed a new outdoor PV and meteorological monitoring facility, which is still in use today by researchers at the University of Nottingham. Rajiv is also a keen science communicator, having won the 3-minute thesis university finals and best poster prize at the 16th PV Performance Modeling Workshop in 2023, and volunteered at public engagement events such as the Big Bang Science Fair in the United Kingdom.

TOP-SET est un programme de formation FONCER du CRSNG en puissance optoélectronique ayant pour but de façonner une cohorte de personnel hautement qualifié détenant des connaissances approfondies en systèmes optoélectroniques pour joindre les rangs d'équipes de recherche et développement.

Pour de plus amples renseignements sur TOP-SET, veuillez consulter create-topset.eecs.uottawa.ca/fr/accueil/.

NSERC CREATE Training in Optoelectronics for Power: from Science and Engineering to Technology (**TOP-SET**) is a training program that aims to form a cohort of highly qualified personnel with comprehensive understanding of optoelectronic systems, capable of joining advanced R&D teams.

For further details regarding TOP-SET, go to create-topset.eecs.uottawa.ca.

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