

CONVITE

O Grupo Fotovoltaica - UFSC convida para assistir a dois seminários que serão apresentados pelo professor Jeffrey Gordon [<http://www.bgu.ac.il/~jeff/>] no auditório do Centro de Pesquisa e Capacitação em Energia Solar da Universidade Federal de Santa Catarina. Dia 19 de abril de 2016 (terça-feira), às 14h.

Sapiens Parque
Av. Luiz Boiteux Piazza, 1302
Cachoeira do Bom Jesus - Florianópolis - SC

Os seminários serão transmitidos ao vivo pelo YouTube, no canal do Fotovoltaica - UFSC:

https://www.youtube.com/channel/UCG7j_EffB_2teLxAomPA3fA

Programação:

14:00 h - 14:45 h - Seminário #1: Concentrator photovoltaics
14:45 h - 15:00 h - Perguntas e respostas
15:00 h - 15:20 h - Intervalo
15:20 h - 16:05 h - Seminário #2: Solar rectifying antennas: a new paradigm for power conversion
16:05 h - 16:20 h - Perguntas e respostas

Seminário #1: Concentrator photovoltaics

Abstract:

Unprecedented capabilities for ultra-efficient solar electricity generation at high concentration stem from the confluence of progress in multi-junction photovoltaic technologies and advanced optical design. The physics and thermodynamics that form the basis for these advances will be reviewed, along with roadmaps for future progress.

Several generations of new optics that approach the fundamental limit to concentration and optical tolerance, and have been tailored to the exigencies of the latest generations of concentrator solar cells, will be presented, some of which already comprise megawatt-scale installations.

In addition, experimental results from novel localized irradiation probes that use ultra-intense concentrated sunlight for investigating concentrator solar cells will be reviewed. The findings include elucidating cell solid-state properties that are of value in designing future generations of higher-efficiency solar converters.



Palestrante:

Jeffrey Gordon, Professor, Department of Solar Energy & Environmental Physics, Ben-Gurion University, Israel. Research and teaching interests focus on advanced optical design, the solar energy sciences, photovoltaic physics, novel nanomaterial syntheses, solar rectifying antennas, and ultra- high algal bioproductivity. BA and MA from Columbia University (Chemical Physics). PhD from Brown University (Chemistry). Post-doc at the Weizmann Institute of Science (Polymer Science). Faculty member at BGU since 1978. <http://www.bgu.ac.il/~jeff/>



Seminário #2: Solar rectifying antennas: a new paradigm for power conversion

Abstract:

This talk will explore the tantalizing prospect of using rectifying antennas for solar power conversion – an approach fundamentally distinct from photovoltaic or solar thermal power converters because antennas harvest only coherent radiation. We evaluate the fundamental limits for this novel solar power conversion strategy from basic optics and thermodynamics.

Rectifying antennas constitute an established, high-efficiency power conversion technology for radio-frequency and microwave frequencies. Since sunlight is commonly viewed as incoherent, is there any promise for antenna harvesting? Even if the answer is "yes", can the immensely broadband solar spectrum (close to 1,000,000 GHz) be rectified (AC to DC) at reasonable efficiencies?

The latest advances in the theory and experimental confirmation of performance bounds for aperture antenna harvesting, based on the partial coherence of solar radiation, will be reviewed. The ramifications for using optical concentrators that can effectively replace orders of magnitude of antenna and rectifier elements will be discussed. In addition, the first derivation of a basic upper bound for the efficiency of rectifying the output of solar antennas will be presented, confirming the promising potential for this new solar power conversion paradigm.