

RMOSA

Rocky Mountain Section of the Optical Society of America



Joint RMOSA/IEEE Photonics Seminar & Meeting

Please join RMOSA for our annual season-end seminar & pizza party!

Thursday, May 21, 2009

Pizza/Refreshments: 6:30 p.m.

Atrium, Lower Level, Koelbel Building, Leeds Business School, CU, Boulder

Seminar: 7:30 p.m.

Room 340, Koelbel Building, Leeds Business School, CU, Boulder

“Studying ion channels in live cells, one molecule at a time”



Dr. Diego Krapf
Electrical and Computer Engineering
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Abstract: Potassium channels play an important role in multiple organs and tissues. In particular, in mammalian neurons Kv2.1 channels have an enormous neuroprotective function attained by their ability to form large clusters on the surface of the cell body. However, the physical mechanism that forms and maintains Kv2.1 clusters has remained largely unknown. We are investigating the dynamics of channel clusters at the single molecule level using particle tracking with nanometer accuracy in live cells. Here, the cluster structure and individual channels are imaged simultaneously in a total internal reflection microscope. Our work shows that the stochastic motion of Kv2.1 channels localized inside clusters and those outside of the cluster fence cannot be explained by standard diffusion. Instead, channels percolate in a complex matrix set by the underlying cytoskeleton.

Bio: Dr. Diego Krapf was born in Rosario, Argentina. He received his B.Sc. in Physics and his Ph.D. in Applied Physics from the Hebrew University of Jerusalem. During his Ph.D. research he worked on infrared optics on nanostructured materials in the lab of Prof. Amir Sa'ar. Then, Dr. Krapf joined the research group of Prof. Cees Dekker in the Netherlands where he focused on single-molecule biophysics using solid-state nanopores. Since August 2007, he serves as assistant professor in the Electrical and Computer Engineering Department at Colorado State University. Today his research interests lie on nanotechnology applications to study the dynamic behavior of protein-DNA complexes.

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