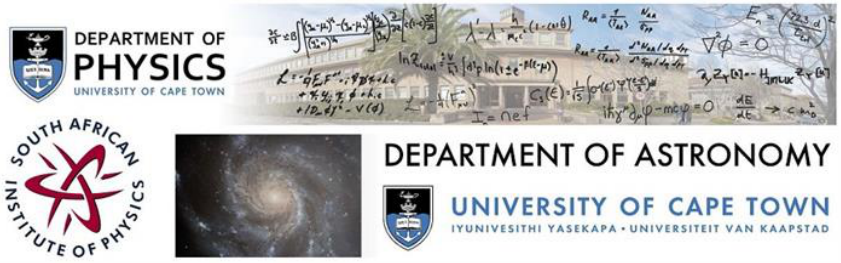

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Exciton dynamics of individual plant light-harvesting complexes as revealed by fluorescence lifetime and intensity shifts.

Wednesday, 6 July 2016 11:50 (20 minutes)

Abstract content
   (Max 300 words)
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The fundamental mechanisms involved in photosynthesis not only provide an opportunity to study physical principles that span over both classical and quantum scales but also take us a step closer to the development of viable alternative energy sources such as cheaper biofuel production and more effective photovoltaics. Some of said mechanisms play a critical role in the photoprotection of oxygenic photosynthetic organisms against high light intensities and are generally referred to as non-photochemical quenching (NPQ). In plants, the fast, reversible, energy-dependent component of NPQ (qE) likely takes place in the major light-harvesting pigment-protein complex (LHCII) and compete with the exciton dynamics that ensure efficient light harvesting. Recent time-resolved studies have revealed that single, isolated LHCII complexes exhibit binary switching between a bright and a dim emission state, a phenomenon called fluorescence intermittency, which is very likely related to slow protein conformational dynamics. We will show the fluorescence lifetime and intensity correlations of single LHCII complexes in NPQ states emulated to different degrees with a particular focus on the less frequently accessed intermediate levels.

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