



# **Old Dominion University**

## **Department of Physics**

**Colloquium**  
**Tuesday, October 27, 2015**

**"Toward a 3D map of the quarks in the atomic nucleus"**

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Abstract: In the last two decades, an intense theoretical activity has build a solid framework in which the generalized parton distributions (GPDs) give a three dimensional picture of the quarks in the proton. These GPDs can be extracted from the Deeply Virtual Compton Scattering (DVCS), i.e.  $e + p \rightarrow e + p + g$ , which has been itself the focus of a very important experimental activity in the recent past.

After briefly reviewing these progresses, we will see how this framework can be applied to heavier nuclei and why it gives access to completely new information on the internal structure of the nucleus. Once this theoretical background established, I will describe the experimental aspect of the nuclear DVCS and in particular our measurement of the helium DVCS with the CLAS collaboration at the Jefferson laboratory (Virginia, USA). Finally, after discussing the impact of this pioneering measurement, I will conclude by presenting the perspectives in this field.

Presentation: **OCNPS 200 @ 3:00 pm**  
Refreshments: **OCNPS Atrium @ 2:30 pm**

**All interested persons are cordially invited to attend.**