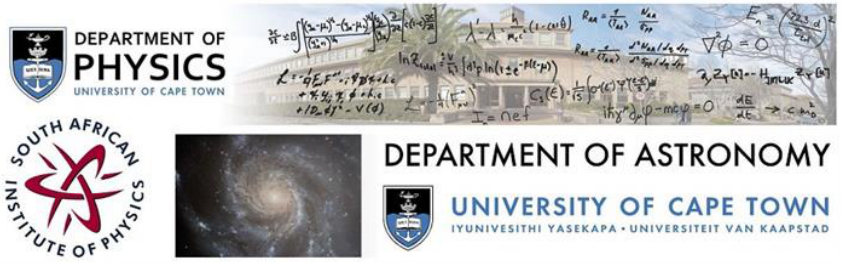

Contribution ID: **401** Type: **Oral Presentation**

Supercontinuum characterisation and compression

Tuesday, 5 July 2016 15:00 (20 minutes)

Abstract content
   (Max 300 words)
Formatting &
Special chars

Working towards non-linear microscopy we set out to build a dynamic pulse compressor that produce the ultra short laser pulses needed for such experiments. Increasing the bandwidth from an already transform limited laser oscillator is essential in creating shorter pulses. This is done by implementing an all-normal dispersion photonic crystal fibre (PCF) pumped by an fs oscillator to produce white light (supercontinuum). Dispersion from the PCF lengthens the pulses in time, which in turn needs to be compensated for to create near transform limited pulses. A 4f-shaper in combination with a 1D Spatial Light Modulator (SLM) is used to characterise the pulses as well as correct for dispersion, and in doing so compress the pulse. This presentation will focus on the optimisation algorithm investigated to compensate for the dispersion of the supercontinuum pulses. The algorithm yields the phase and amplitude of the compressed pulse. This is compared to other pulse characterisation techniques. The characteristics of the successfully compressed pulses will be presented and the potential application of these pulses in non-linear microscopy will be discussed.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

MSc

Main supervisor (name and email)
and his / her institution

Prof Erich Rohwer - egr@sun.ac.za

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

No

Please indicate whether
this abstract may be
published online
(Yes / No)

Yes

Primary author: Mr VILJOEN, Ruan (Stellenbosch University)

Co-authors: Mr SPANGENBERG, Dirk-Mathys (University of Stellenbosch); Prof. ROHWER, Erich (University of Stellenbosch); Dr NEETHLING, Pieter (Laser Research Institute, University of Stellenbosch)

Presenter: Mr VILJOEN, Ruan (Stellenbosch University)

Session Classification: Photonics

Track Classification: Track C - Photonics