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## Non-linear power amplifiers for atomic physics applications

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**Abstract content <br> &nbsp; (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/a" target="\_blank">Formatting &<br>Special chars</a>**

RF amplifiers are essential components of atomic physics laboratories. They are used to drive electro- and acousto-optical modulators, to generate RF fields in Paul traps, and to manipulate the hyperfine states of trapped atoms. Typically, expensive commercial broad band linear amplifiers are used to amplify a signal from a signal generator. However, in most cases a high RF voltage is required only to drive a resonant load at a specific frequency. We show that high efficiency, narrow band, nonlinear RF amplifiers can easily be constructed to drive a resonant load. These amplifiers are low cost, and can be constructed by physics students from readily available parts. We present laser frequency stabilization systems, and an RF Paul trap driver based on our amplifiers, that demonstrate the applicability of nonlinear amplifiers in experimental atomic physics.

**Apply to be<br> considered for a student <br> &nbsp; award (Yes / No)?**

Yes

**Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD)?**

Msc

**Main supervisor (name and email)<br>and his / her institution**

Hermann Uys (HUys@csir.co.za)

Institution: CSIR

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

No

**Primary author:** Mr BURD, Shaun (CSIR)

**Co-authors:** Dr UYS, Hermann (CSIR); Mr DU TOIT, Pieter (University of Pretoria / iThemba LABS)

**Presenter:** Mr BURD, Shaun (CSIR)

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