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## Exploring the spectroscopy of vibrational levels in the transitional rare earth region

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

Vibrational levels are well known in atomic nuclei but despite many decades of research, some of their properties still remains elusive. In particular, the low-lying rotational bands based on the second  $0^+$  state, which are traditionally understood as beta-vibrational bands nevertheless show properties at odds with this interpretation. For example, neutron transfer reactions in the  $N^{\sim}90$  region do not support this interpretation. An alternative is that they can better be described as a "second vacuum", or a coexisting minimum in the pairing degree of freedom. In a search for the picture that best describes the nature of the first excited  $0^+$  states in the 160 mass region ( $N^{\sim}90$ ), a comprehensive analysis is being undertaken on the data taken using the Jurogam II array in Jyvaskyla, Finland for  $^{157}\text{Dy}$ . The status of the analysis and results from this experiment will be discussed.

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

Yes

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

PhD

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

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

No

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