



DEPARTMENT OF ASTRONOMY

UNIVERSITY OF CAPE TOWN  
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## Measurements of W-boson production in p-Pb collisions with ALICE at the LHC

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

ALICE (A Large Ion Collider Experiment) is designed and optimized to study ultra-relativistic heavy-ion collisions, in which a hot and dense, strongly-interacting medium is created. W bosons are produced in hard scattering processes and interact weakly with the medium formed in heavy-ion collisions. Thus, they are suitable references for processes which are heavily affected by the medium. In proton-nucleus collisions the production of W bosons is used to study the modification of parton distribution functions in the nucleus and to test the validity of binary collision scaling. The latter is investigated by measuring the yield of W bosons in different intervals of event activity. The production of W bosons is studied in p-Pb collisions at a center-of-mass energy of  $\sqrt{s_{NN}} = 5.02$  TeV with the ALICE muon spectrometer at forward ( $2.03 < y_{\mu} < 3.53$ ) and backward rapidity ( $-4.46 < y_{\mu} < -2.96$ ). The W-boson signal is extracted from the inclusive single muon differential  $p_T$  spectrum. Recent results are discussed, and the measured cross sections are compared to perturbative Quantum Chromodynamics calculations at next-to-leading order.

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

No

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

PhD

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

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

No

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

No

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