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## First Calculation of the full Space-Time Evolution of Jets

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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>**

Particle physics has had remarkable success in describing collider data using the usual Feynman diagram techniques, but there is still little knowledge regarding what happens to particles during the time of interaction. We use the Schwinger-Keldysh finite-time formalism applied to an interacting scalar field theory to derive a perturbative expression for the energy momentum tensor associated with the production of an off-shell jet, in an effort to analytically probe the untouched regime of finite-time physics. Possible applications include perturbative calculations of dispersion relations for interacting non-linear theories, insight into the flow of momentum for off-shell particles, and the creation of a hybrid early-time pQCD/late-time AdS/CFT energy loss model to describe high-momentum observables in heavy-ion collisions.

**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**

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

Yes

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