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## A GPU Based Polyhedral Particle DEM Transport Code

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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>**

Discrete Element (DEM) simulations are useful in a number of engineering disciplines such as mining, agriculture, etc. However the computational cost of discrete methods limits the number and detail of particles that can be simulated in a reasonable time frame without the use of a dedicated CPU cluster. This paper introduces a novel DEM based particle simulation code (BLAZE-DEM) that is capable of simulating millions of particles on a desktop computer utilizing a NVIDIA Kepler Graphical Processor Unit (GPU) via the CUDA programming model. BLAZE-DEM is 4 times faster than any other published code and capable of simulating over 50 million polyhedral particles compared to just 256 thousand by other codes.

**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)?**

Yes

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