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Genetic algorithms in astronomy and astrophysics

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<p>Genetic algorithms form a class of search heuristics that incorporate, in a computational setting, the biological notion of evolution by means of mutation and natural selection. Compared to more conventional search and optimisation techniques, genetic algorithms are very easy to implement and they tend to be extremely robust and versatile. Although already ubiquitous in fields such as computer science, engineering and artificial intelligence, genetic algorithms have not yet been widely adopted in the physical sciences.

I provide a very brief introduction to genetic algorithms and outline their relevance to a number of diverse problems in astronomy and astrophysics, from stellar structure modelling and astroseismological analyses to robotic telescope scheduling. In particular I discuss a difficult optimisation problem in gravitational microlensing analysis for which it is hoped that genetic algorithms might facilitate an efficient exploration of an enormous parameter space.

Level (Hons, MSc,
   PhD, other)?

MSc

Consider for a student
   award (Yes / No)?

Yes

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

Yes

Primary author: Mr RAJPAUL, Vinesh (UCT)

Presenter: Mr RAJPAUL, Vinesh (UCT)

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