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Editorial

This special issue of the *Journal of Discrete Algorithms* contains three papers from the *Algorithms and Complexity in Durham Workshop* (*ACID*'10), held at Durham University, U.K. from 20–22 September 2010. All papers have been fully refereed and adhere to the high standards of the *Journal of Discrete Algorithms*. The ACiD workshop was the fourth workshop held by the *Algorithms and Complexity research group* in the School of Engineering and Computing Sciences at Durham University. It attracted 38 participants and included excellent invited talks from Amin Coja-Oghlan (University of Warwick), Bill Jackson (Queen Mary University of London), Dieter Kratsch (University of Metz), Sarah Rees (University of Newcastle) and Rahul Santhanam (University of Edinburgh).

The three papers reflect the intentions to foster collaborations and research dissemination at the interface between mathematics (primarily discrete mathematics and mathematics involving computation) and theoretical computer science (primarily algorithms and computational complexity). The paper "*Dynamic graph-based search in unknown environments*" by Paul S. Haynes, Lyuba S. Alboul and Jacques S. Penders involves searching in unknown environments and imposes a virtual geometric structure upon the environment represented in memory by a graph. An efficient algorithm is developed that uses this representation to coordinate a team of robots in a search. The paper "*Max-leaves spanning tree is APX-hard for cubic graphs*" by Paul Bonsma considers the problem of finding a spanning tree with a maximum number of leaves. Whilst a 2-approximation algorithm is known for this problem, and a 3/2-approximation algorithm when restricted to graphs where every vertex has degree 3, the problem is shown to be APX-hard for cubic graphs. The paper "*Astral graphs* (*threshold graphs*), *scale-free graphs and related algorithmic questions*" by Alexei Vernitski and Artem Pyatkin presents the astral index as a promising new graph measure for analysing the structure of graphs. Theoretical results concerning astral graphs and the astral index are proven, and a connection between astral graphs and scale-free graphs is revealed. Finding the exact value of the astral index is proven to be an NP-hard problem.

Iain A. Stewart *
Daniel Paulusma
Matthew Johnson
ACiD, School of Engineering and Computing Sciences, Durham University, United Kingdom
E-mail address: i.a.stewart@durham.ac.uk (I.A. Stewart)

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* Corresponding author.

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