Extracting Stable Community Information on Relational Data

U.S. DEPARTMENT OF **ENERGY**

National Nuclear Security Administration
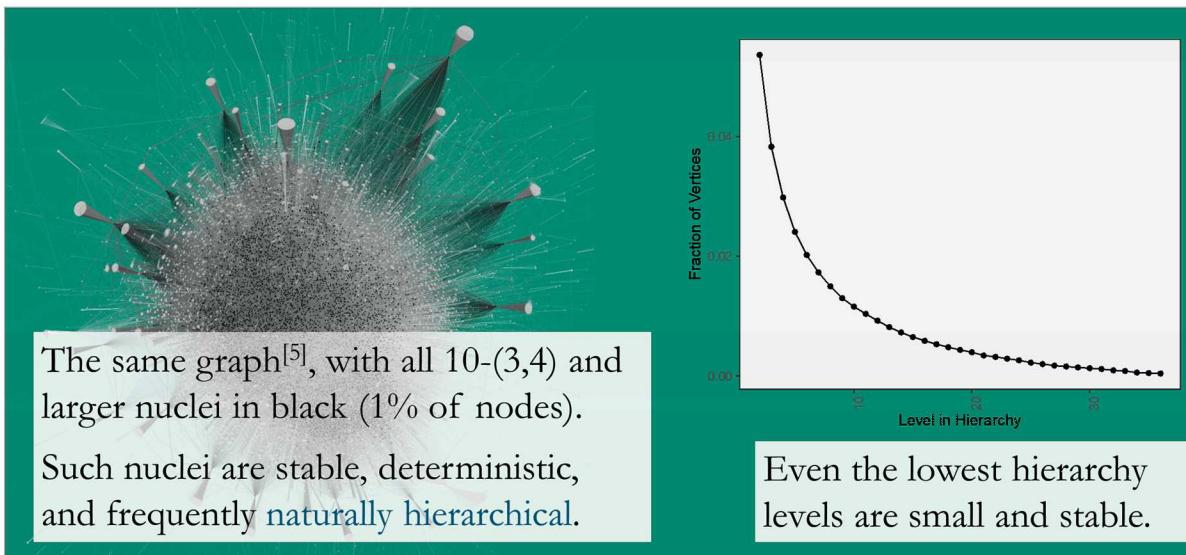*Defense Nuclear Nonproliferation*

- **Community detection is common in many applications.**

- **Popular algorithms can have wildly varying results on multiple runs or after minor changes to the data.**

- **We developed algorithms[†] to track naturally stable graph nuclei dynamically, and are using them discover robust communities.**

The same graph[5], with all 10-(3,4) and larger nuclei in black (1% of nodes).

Such nuclei are stable, deterministic, and frequently naturally hierarchical.

Even the lowest hierarchy levels are small and stable.

[†] Work by Kasimir Gabert and Ali Pinar

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