

(Wireless) Scheduling, Graph Classes, and c-Colorable Subgraphs

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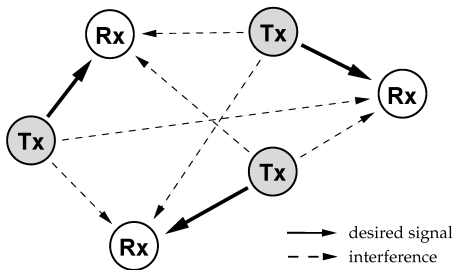
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TU Berlin

²Department of Mechanics and Mathematics
Novosibirsk State University

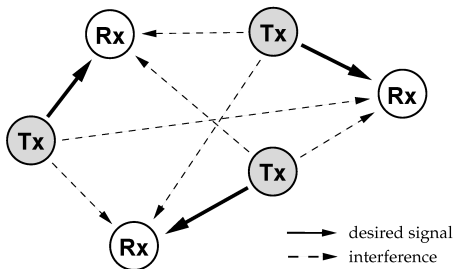
³Sobolev Institute of Mathematics of the Siberian Branch of the Russian
Academy of Sciences

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Scheduling in wireless networks

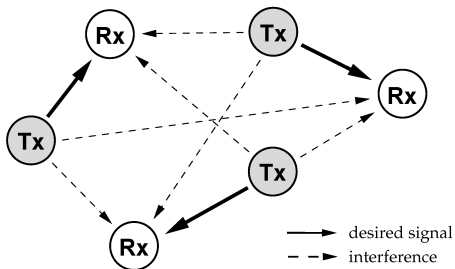


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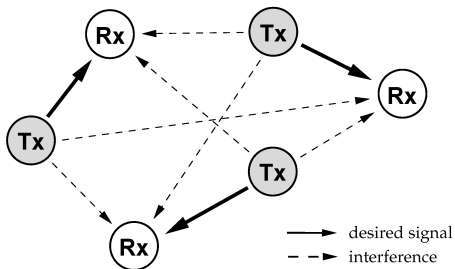
Scheduling, routing and power control/assignment in wireless communication networks translates to **c -Colorable Subgraph** in inductive k -independent graphs with constant k . [Ásgeirsson, Halldórsson and Tonoyan: *Universal Framework for Wireless Scheduling Problems*. ICALP, 2017.]

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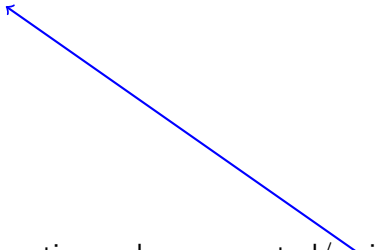
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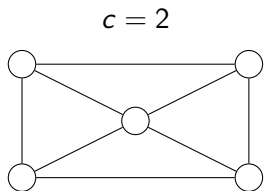
largest set (or sum of weights) of vertices whose induced subgraph is proper c -colorable



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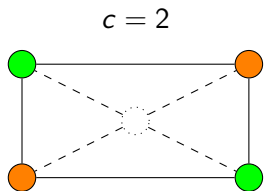
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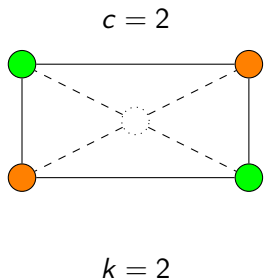


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there is an ordering of the vertices such that each vertex has only k independent neighbors that appear later in the ordering

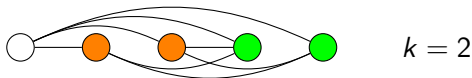
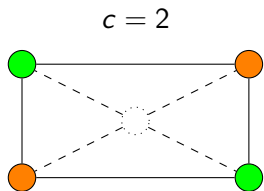


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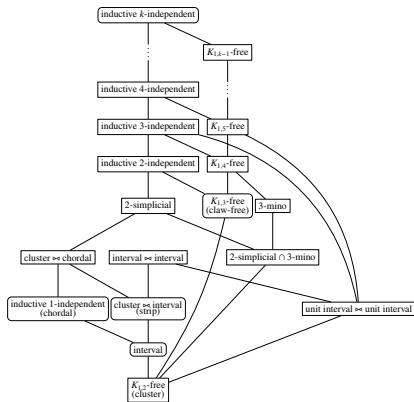
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Main Result

- We collected graph classes that appear in the context of scheduling and build an inclusion diagram

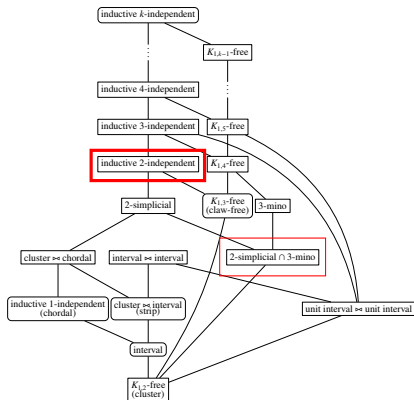
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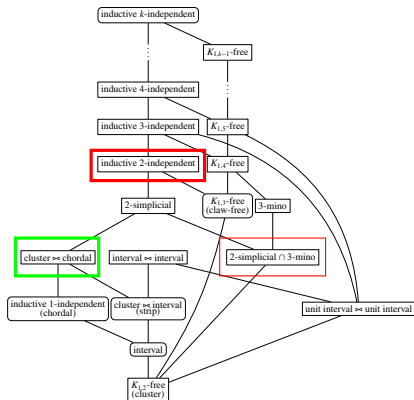
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- **Independent Set** is $W[1]$ -hard with respect to solution size on inductive 2-independent graphs



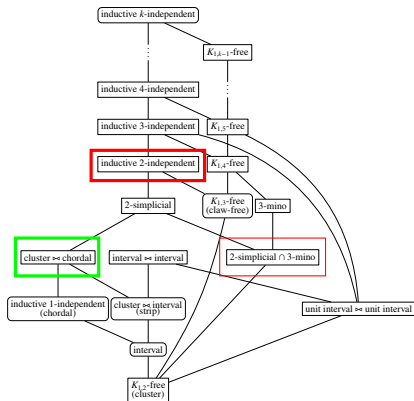
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Thank you.