State-Based Mode Switching with Applications to Mixed-Criticality Systems

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WMC 2013

Mixed Criticality as Mode Switching

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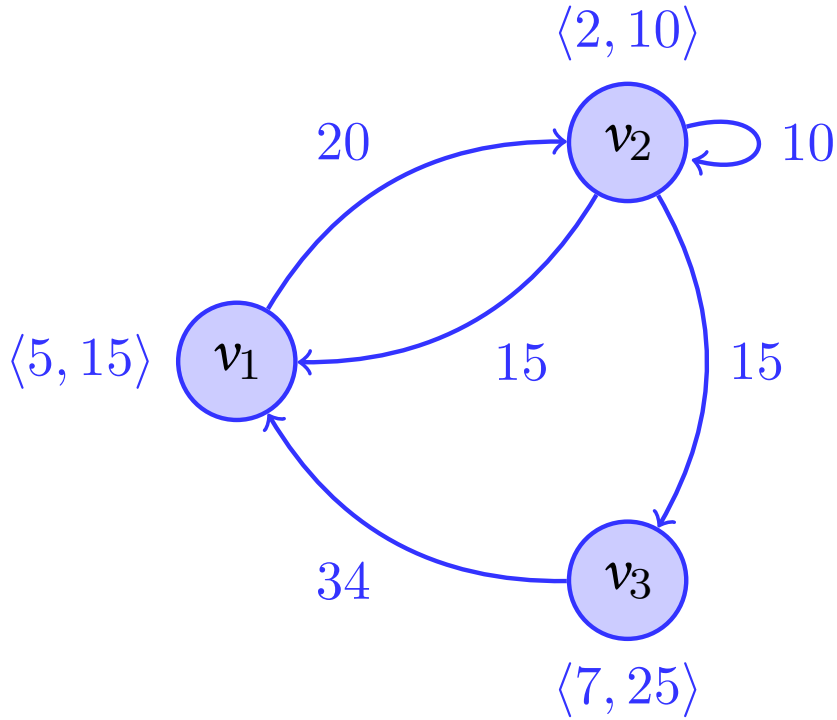
Purely sporadic both before and after switch!

Task Graphs — The Very Short Story



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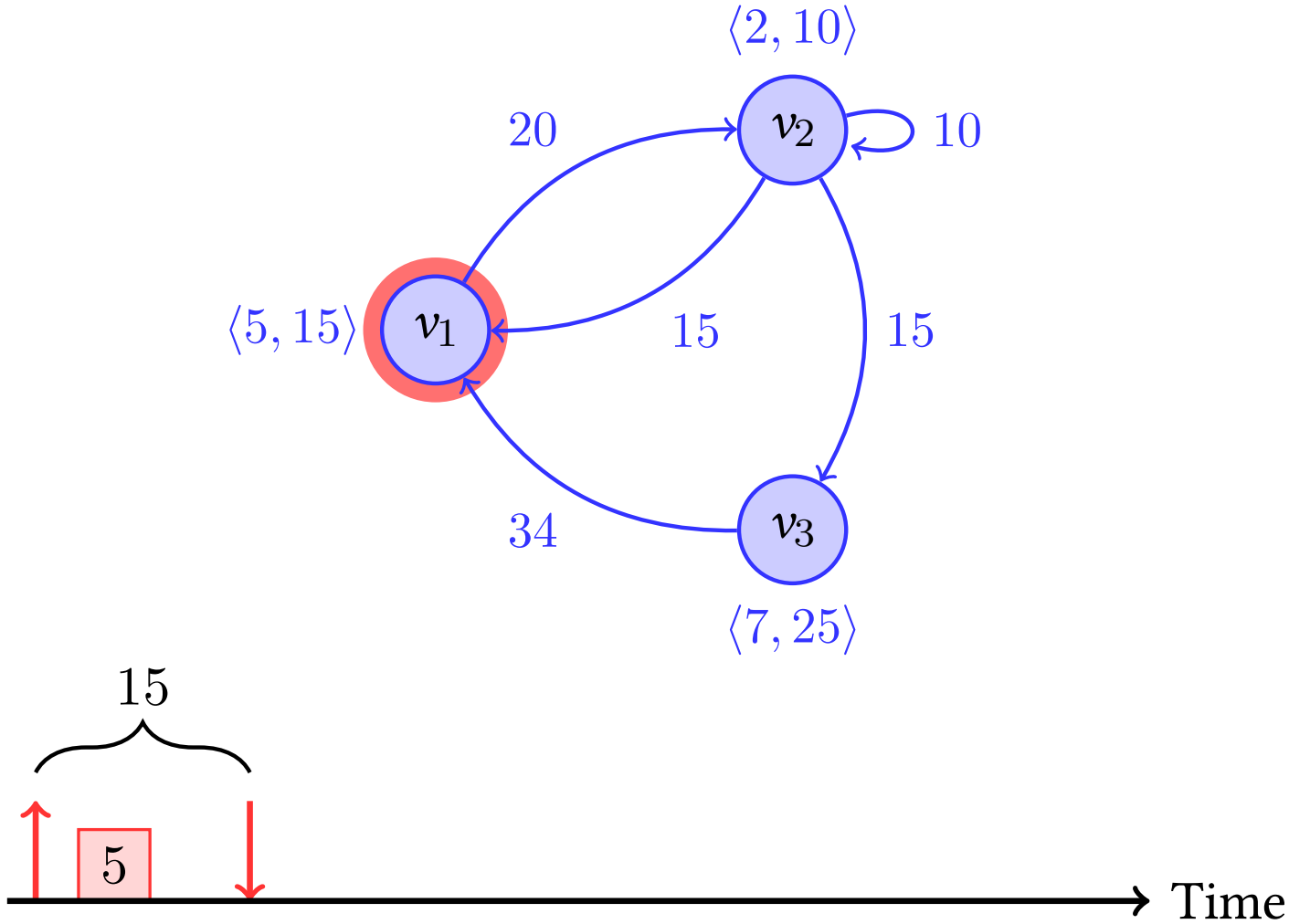

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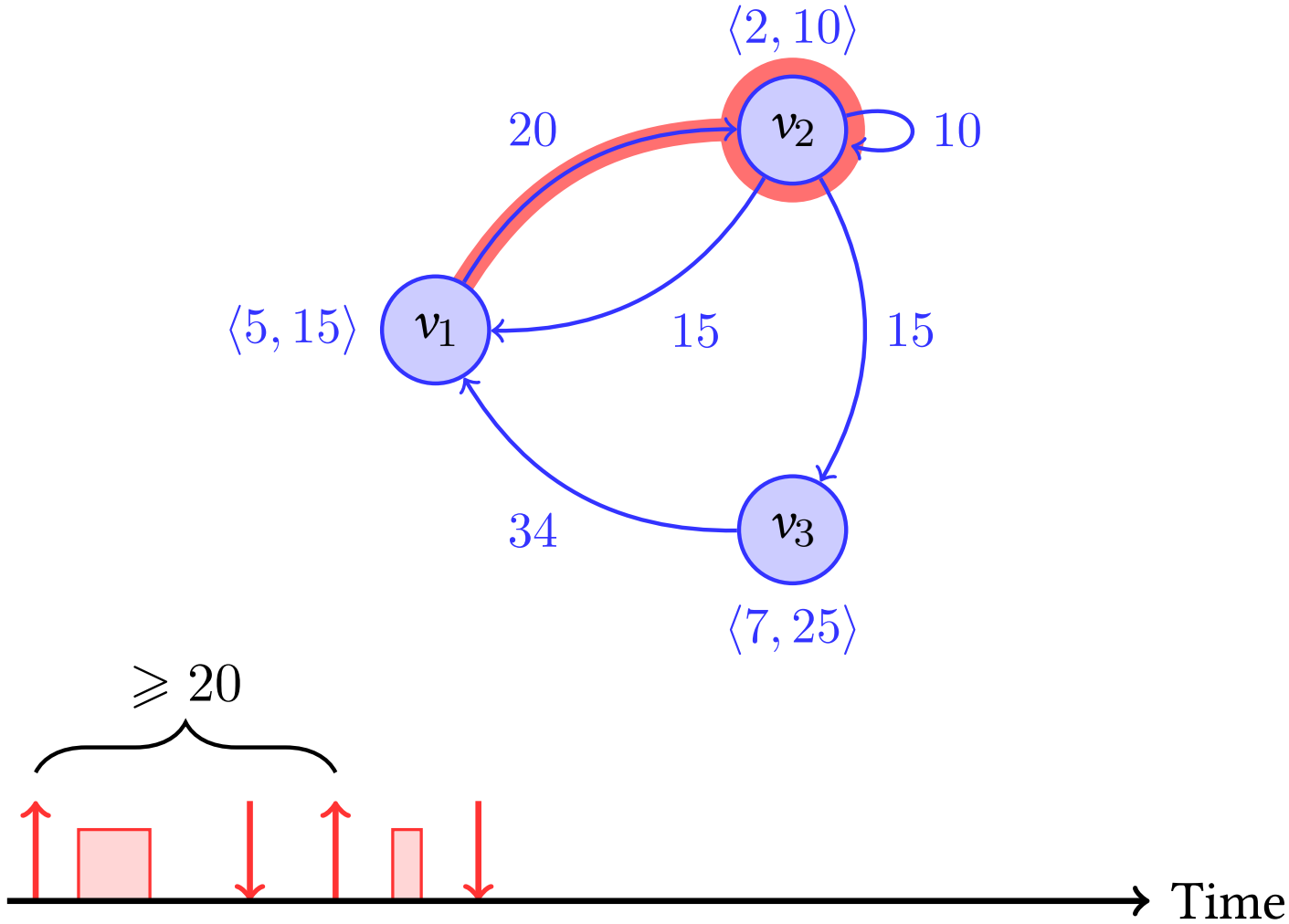

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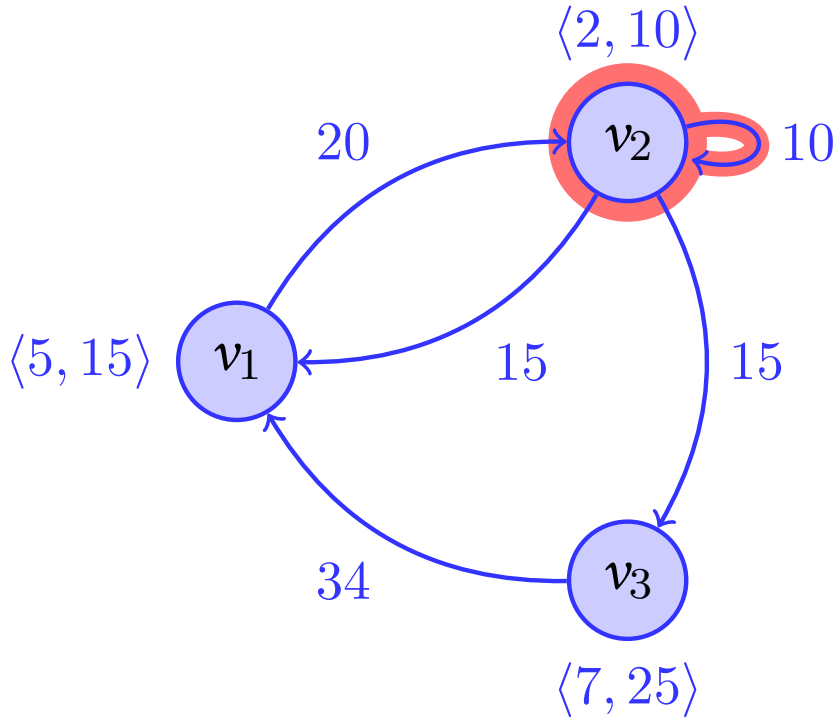

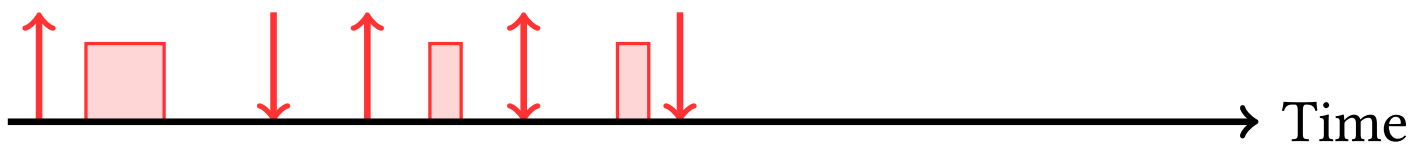

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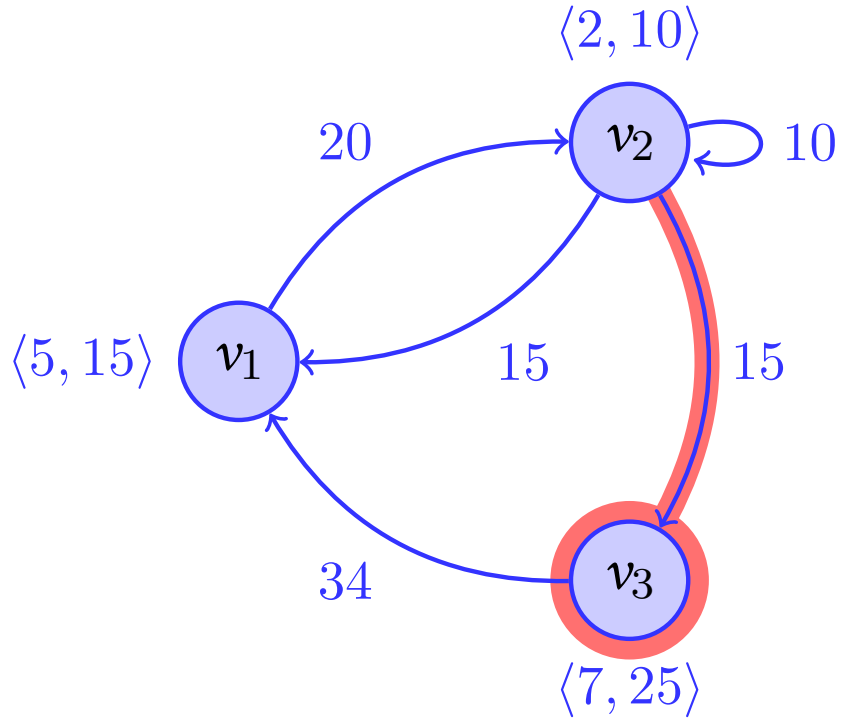

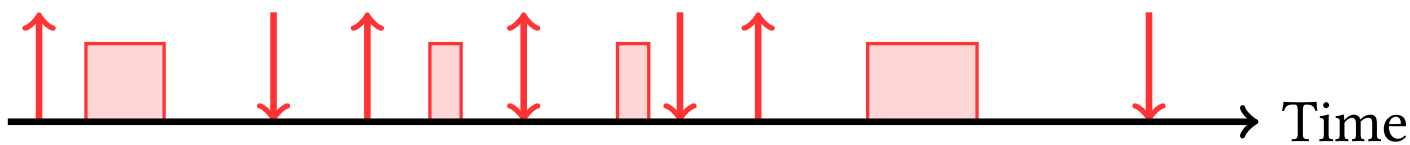

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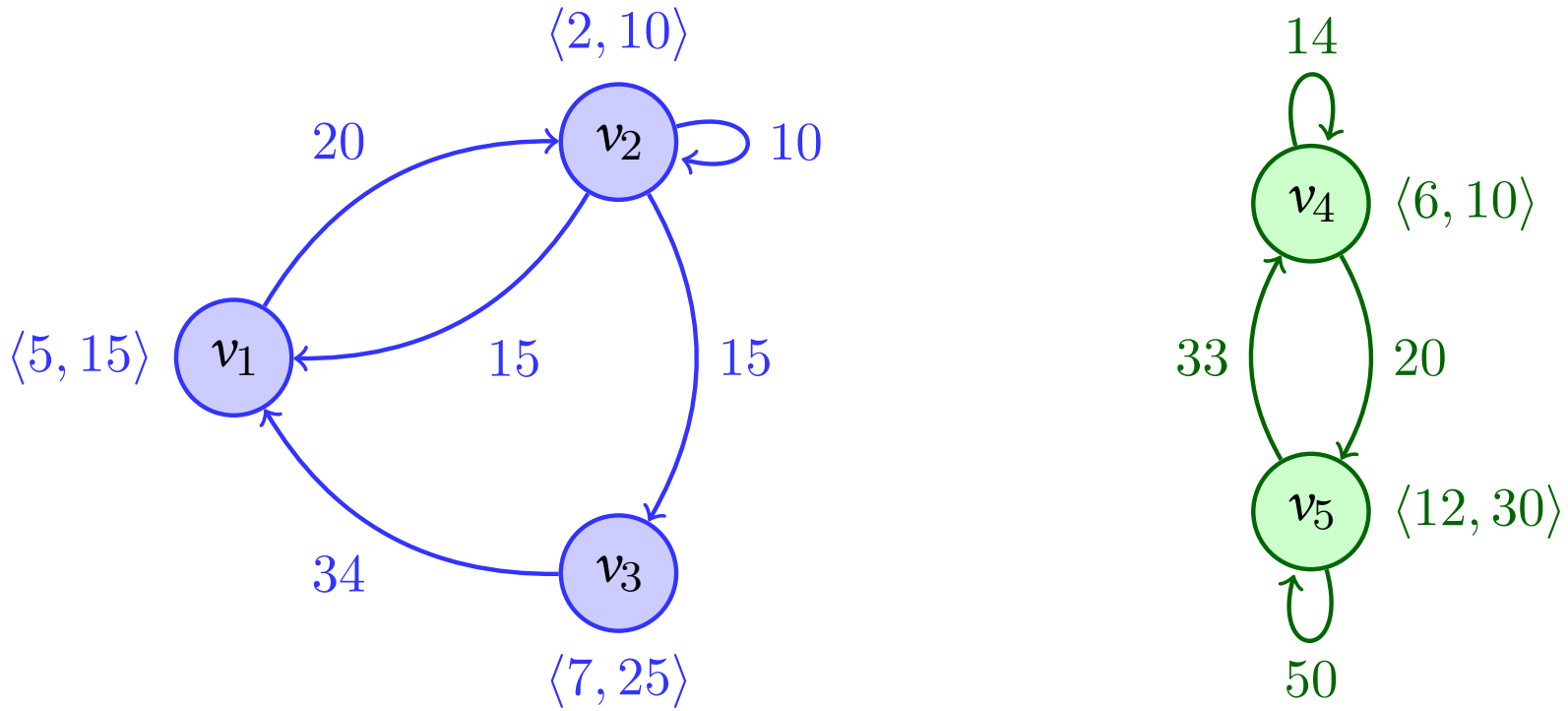

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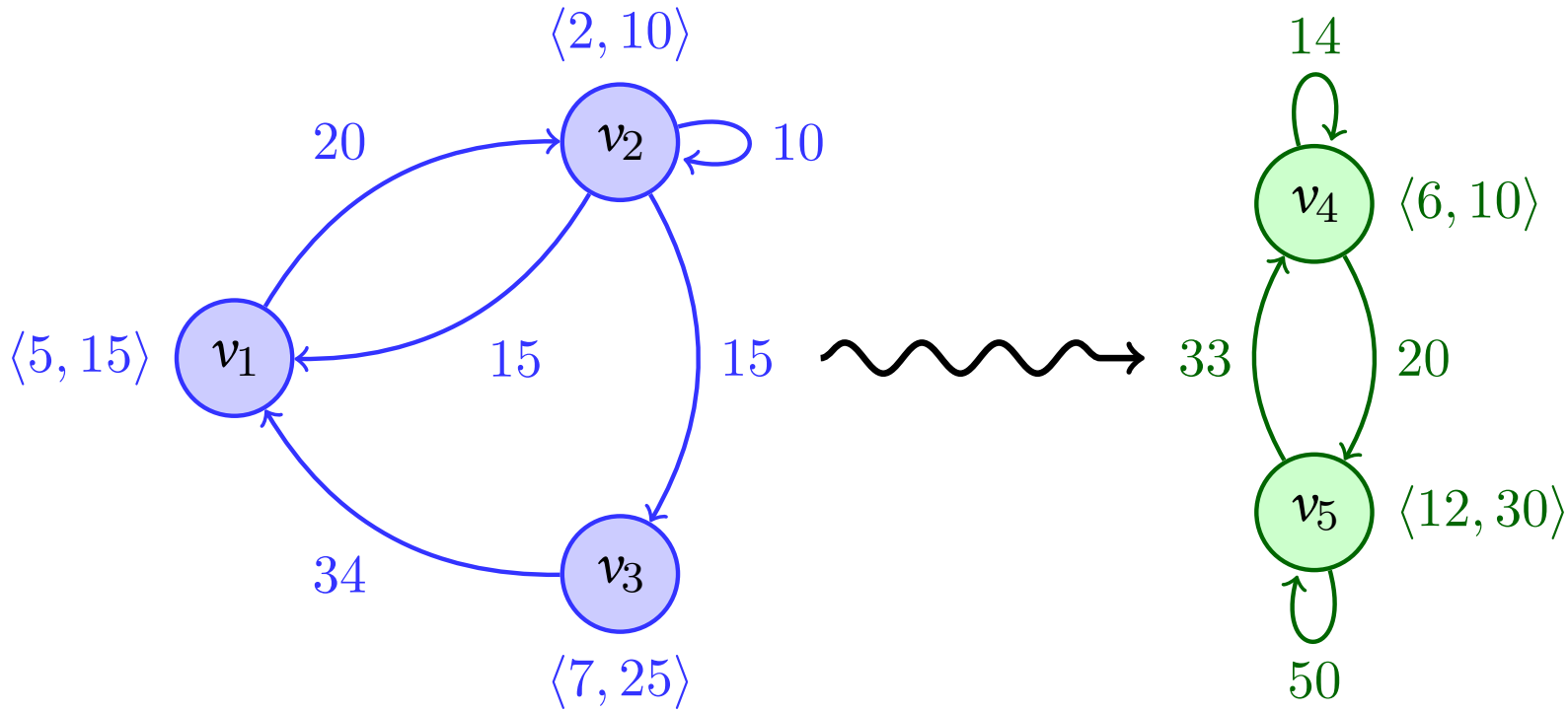

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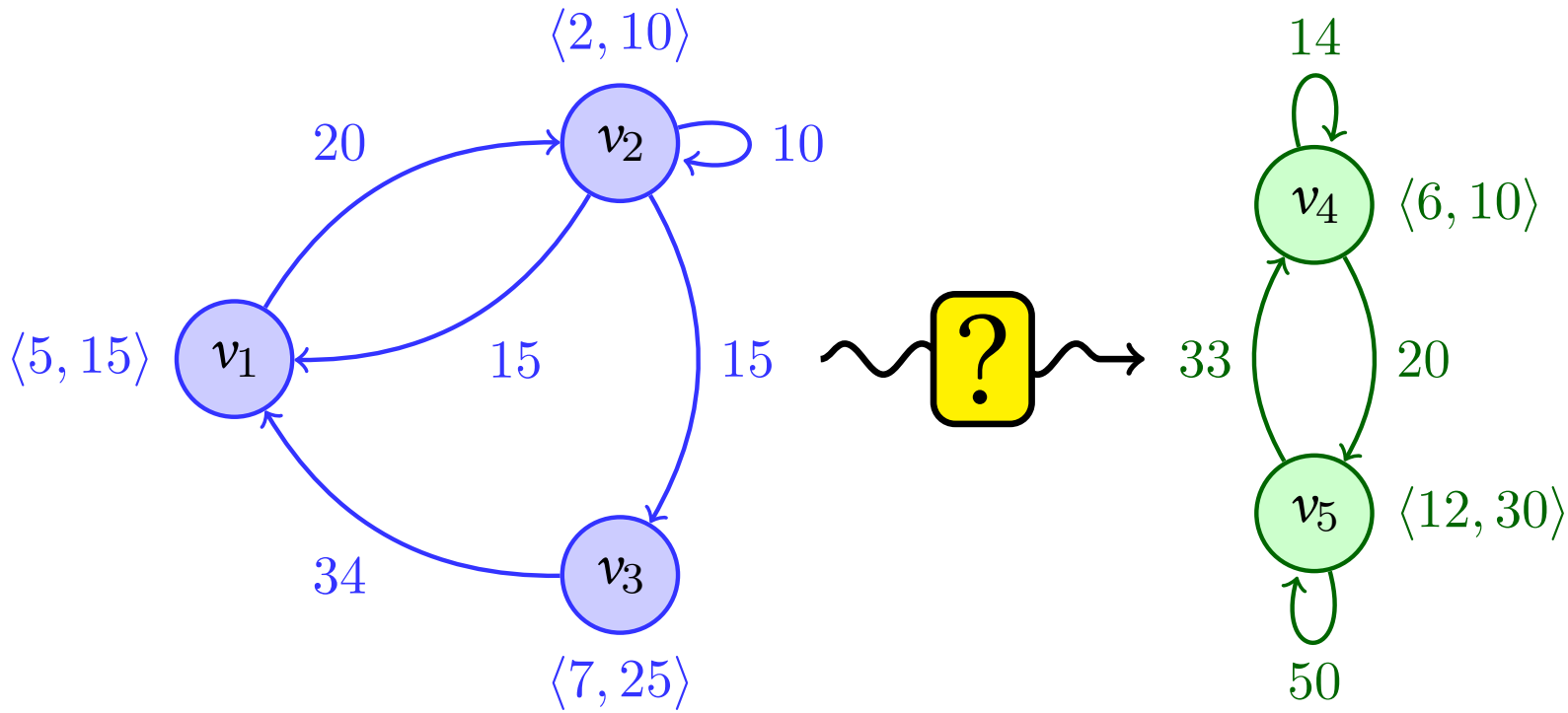

Revisiting an Old Friend

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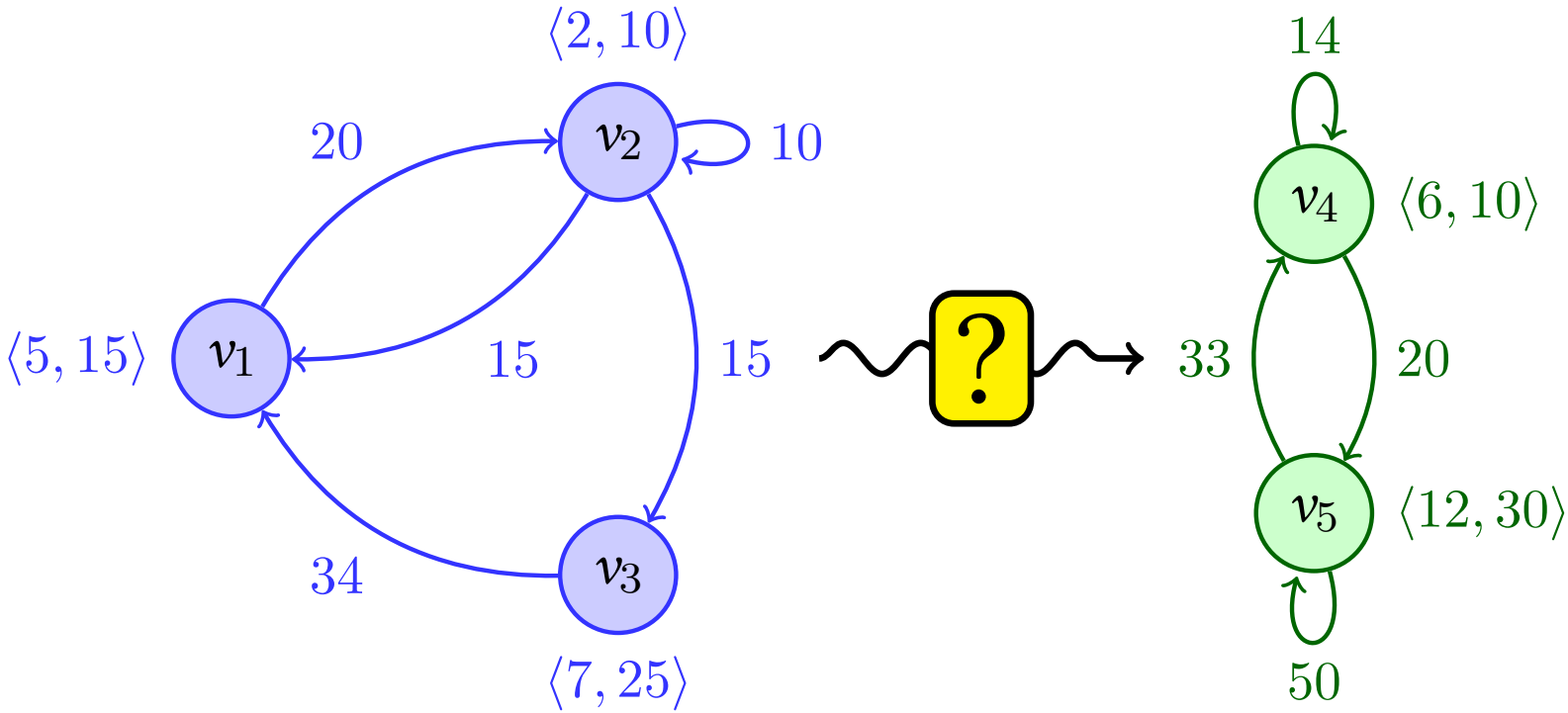

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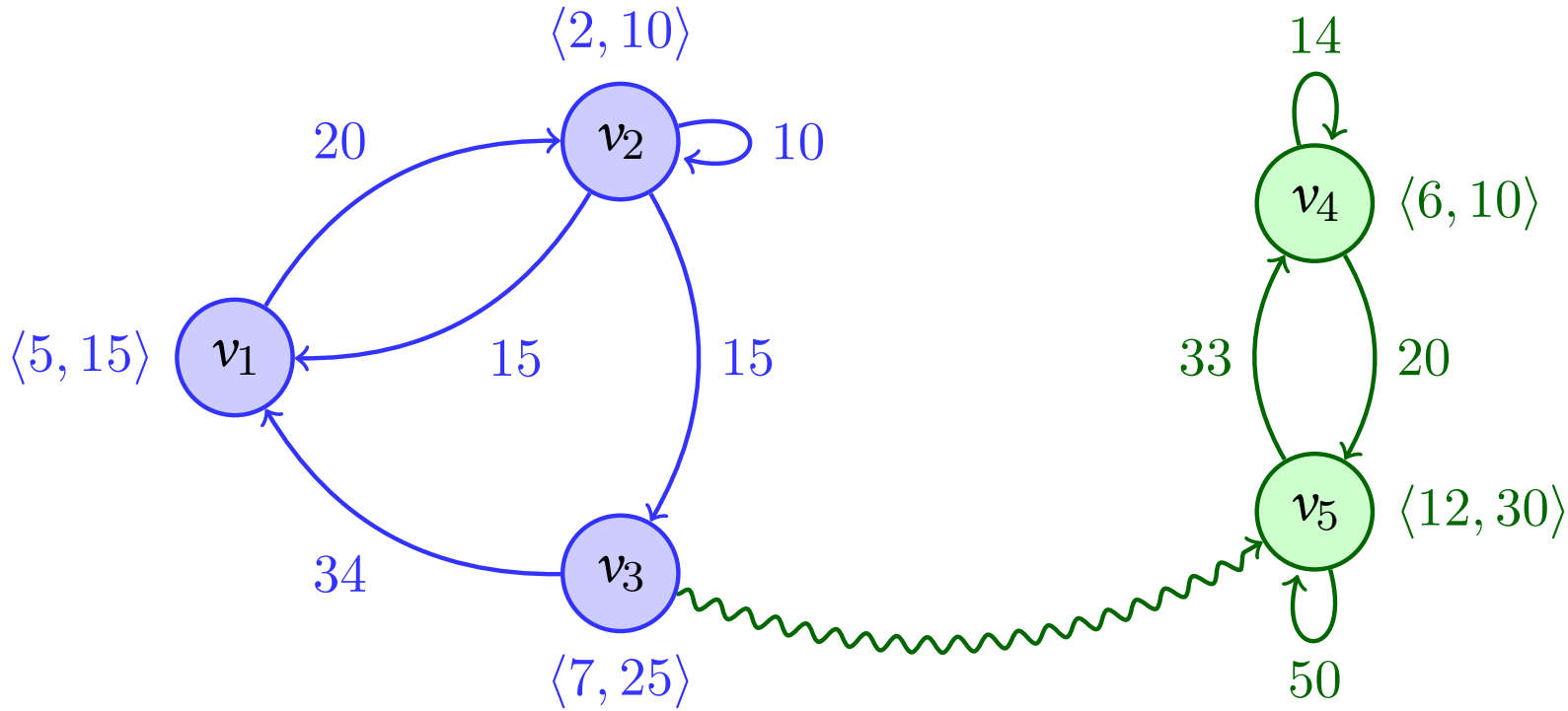

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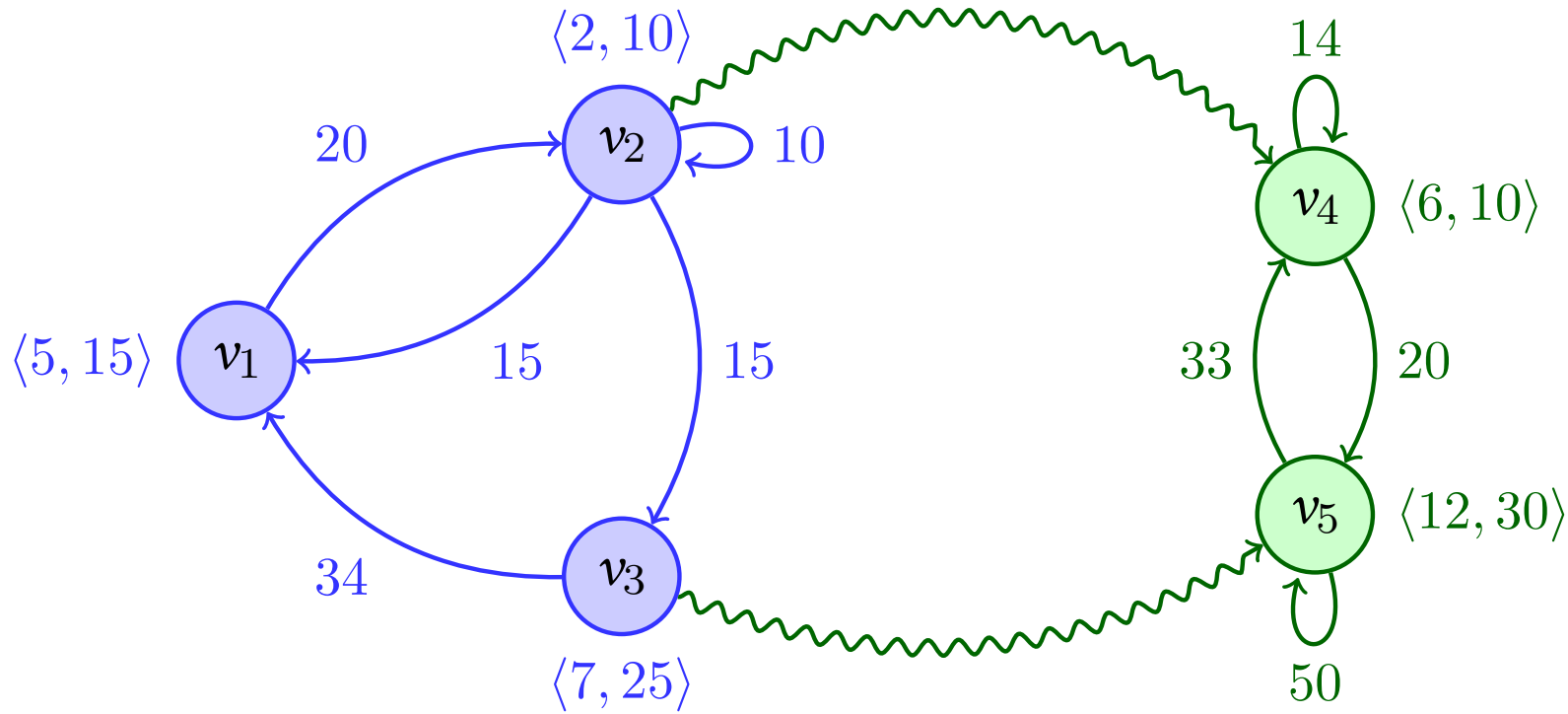

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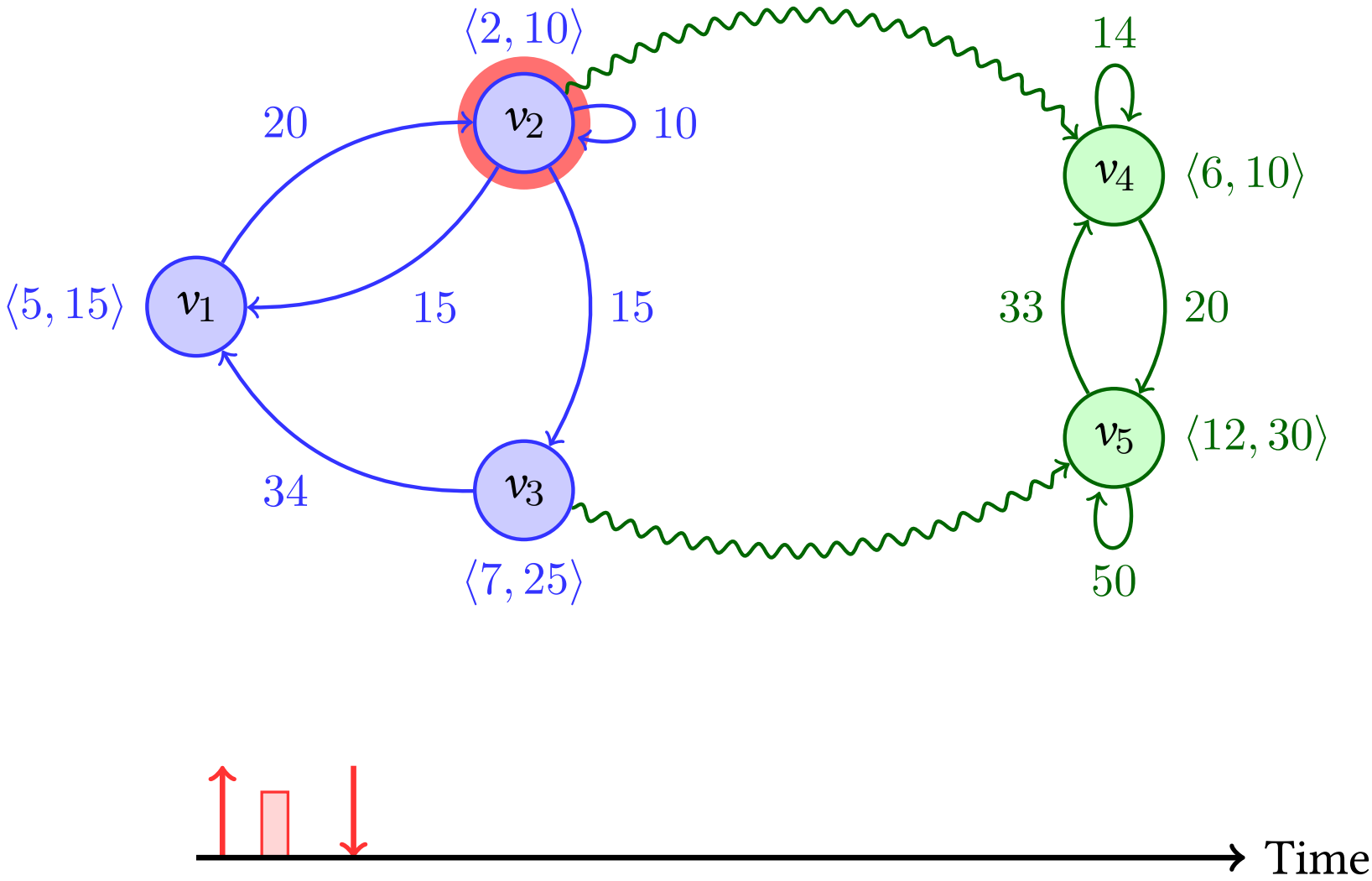

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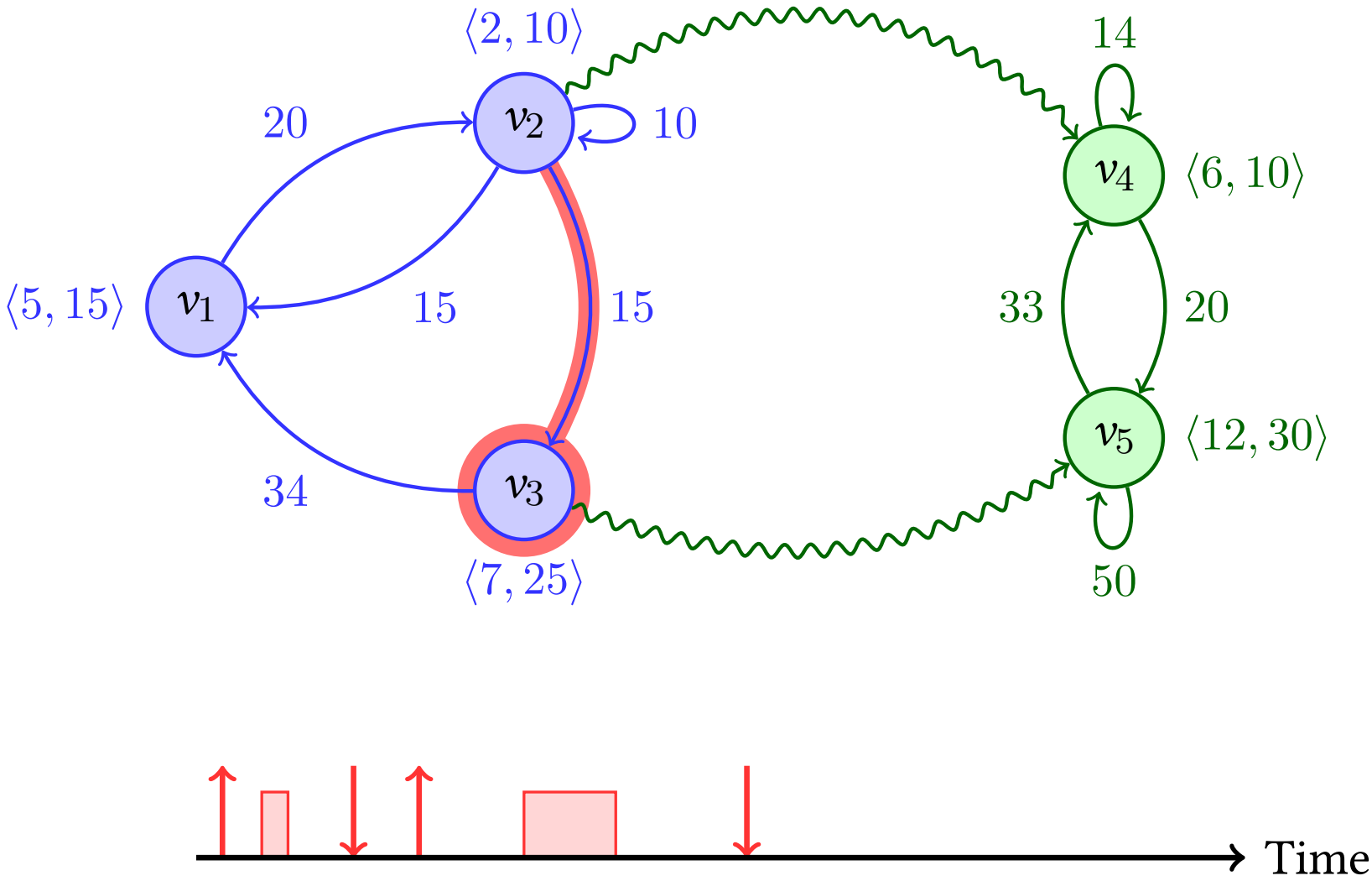

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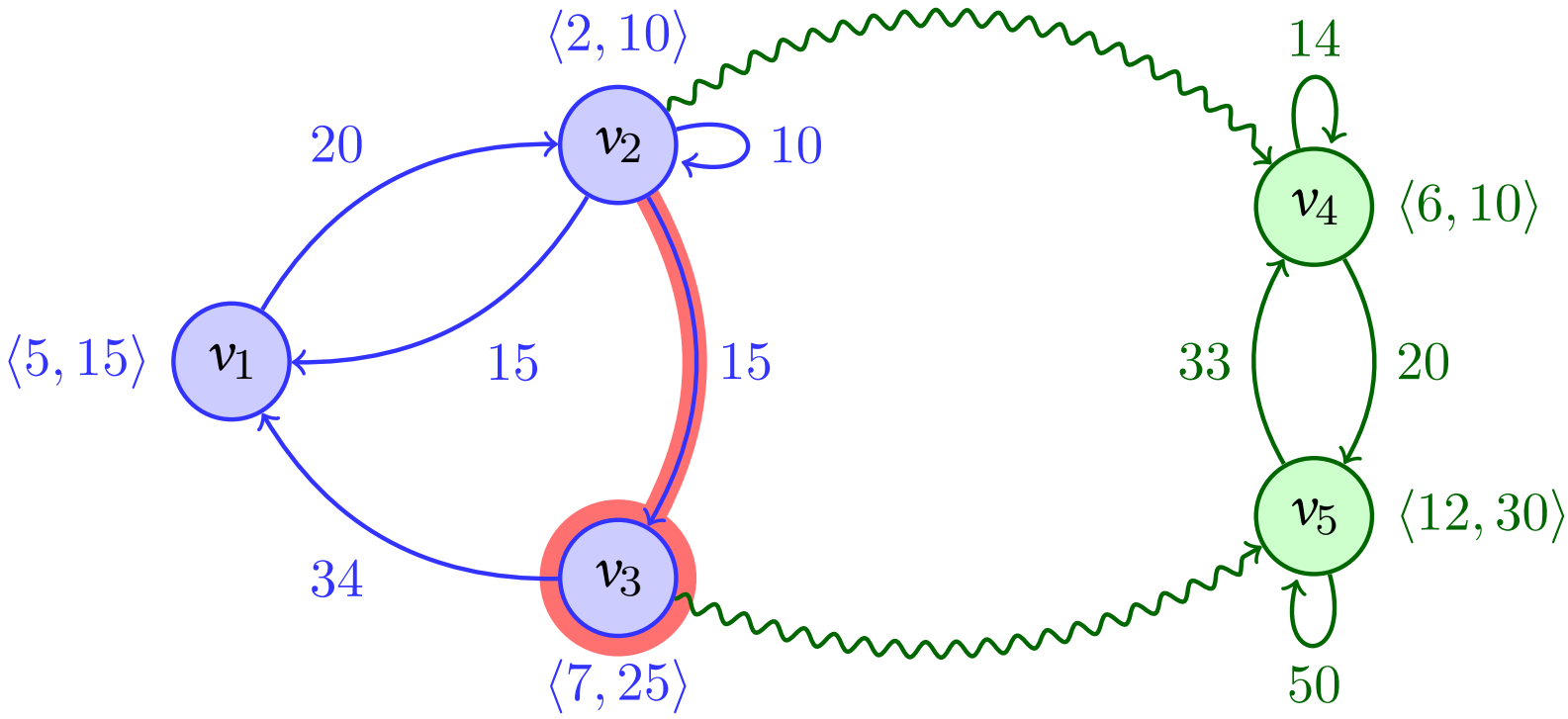

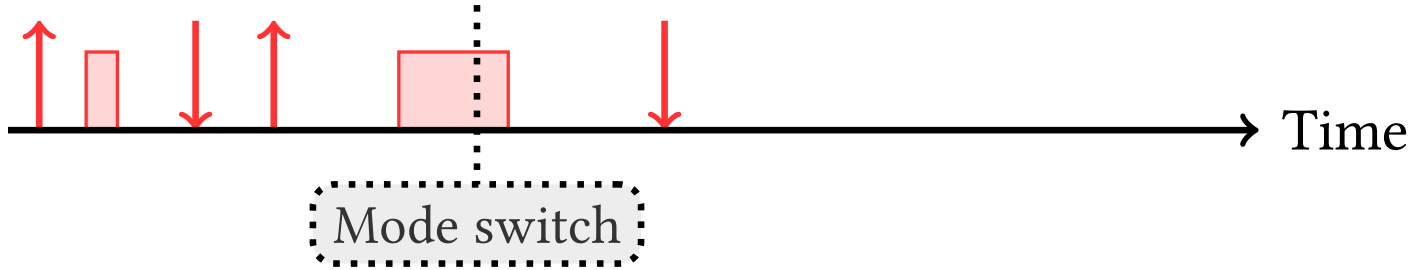

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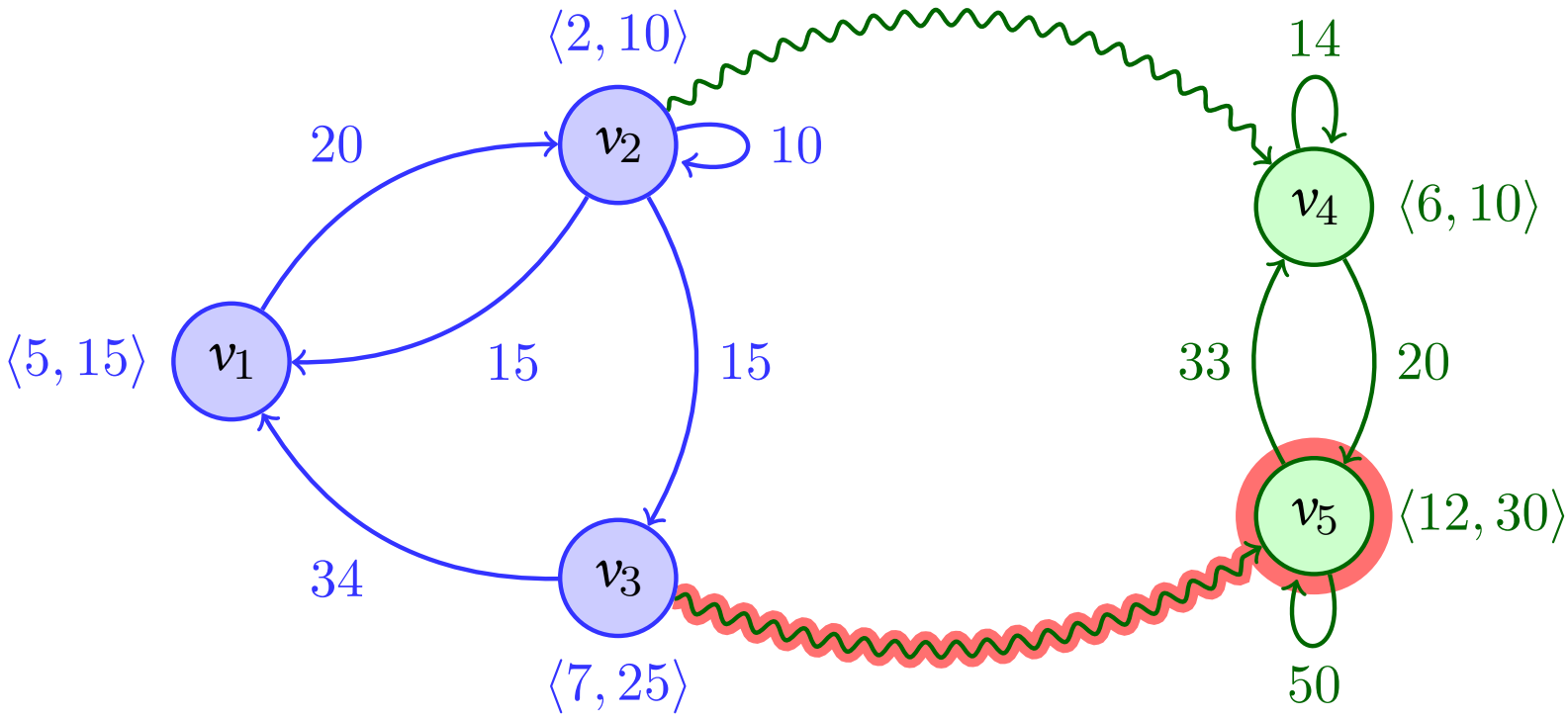

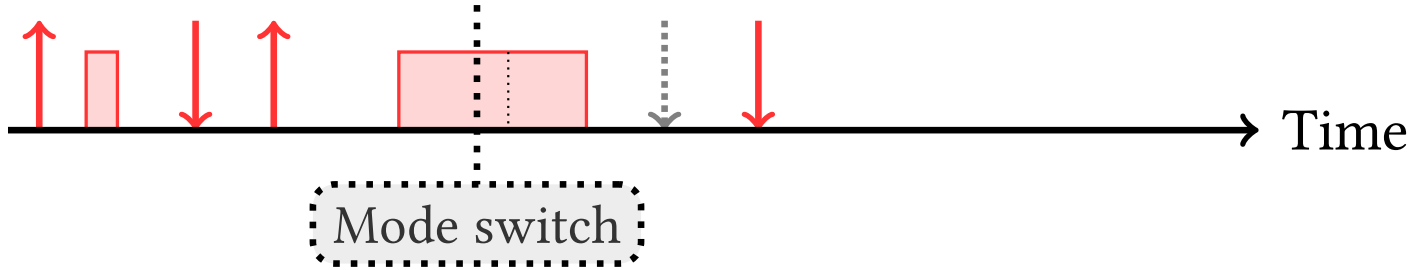

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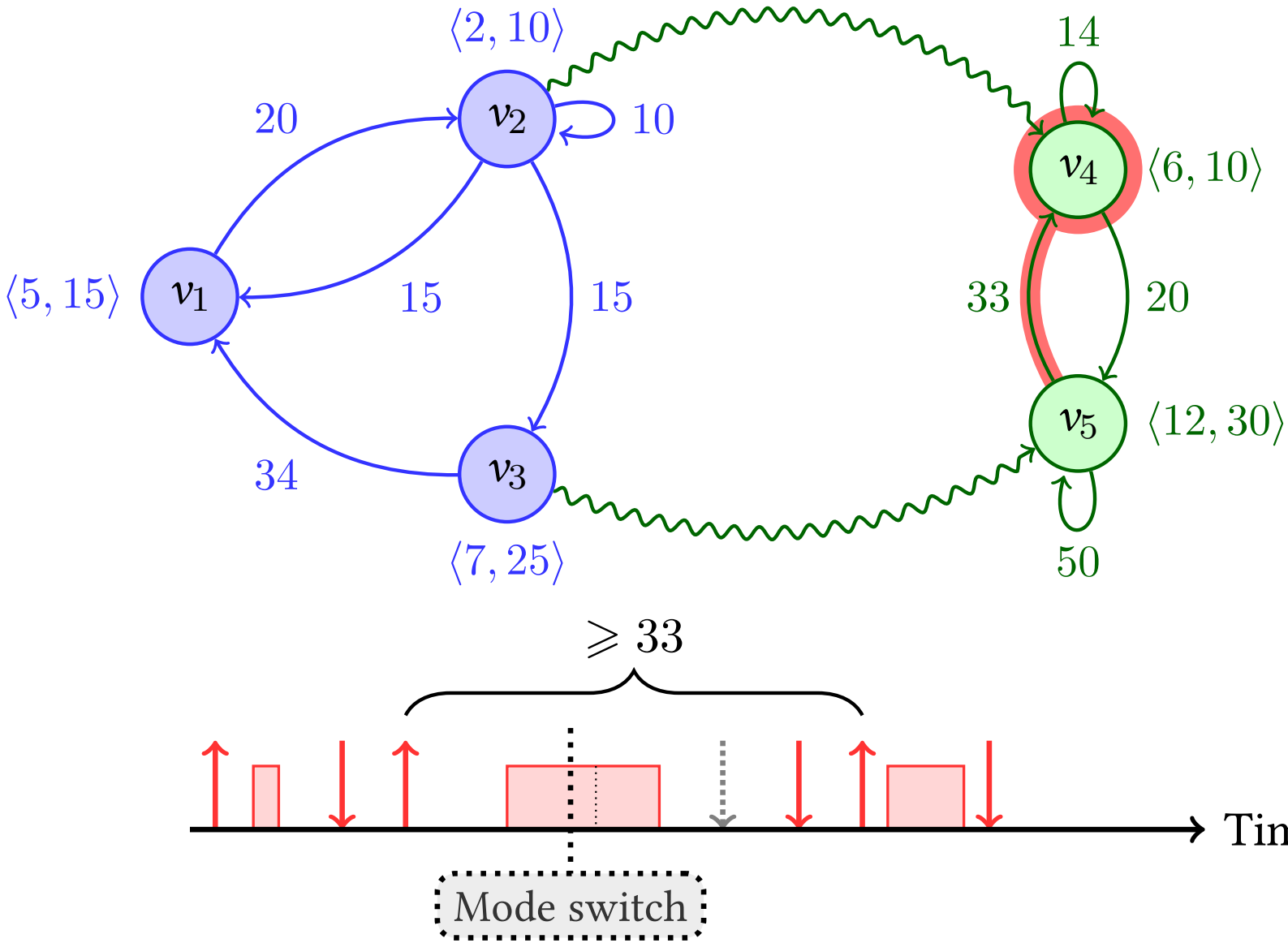
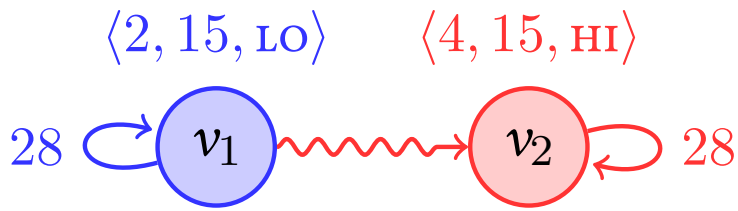


Example: Sporadish Dual-Criticality Tasks



Standard high-criticality sporadic task.

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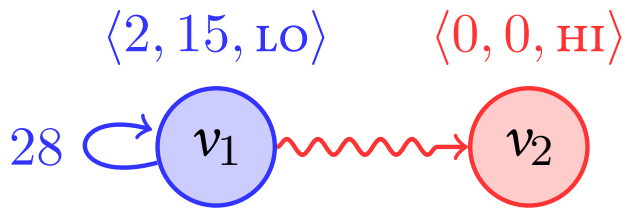

Standard low-criticality sporadic task.

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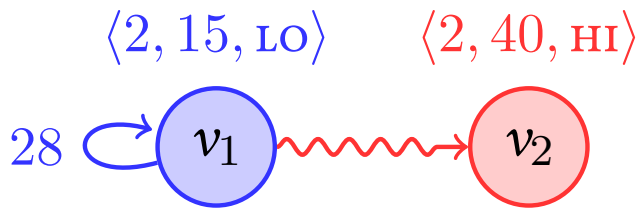

Low-criticality sporadic task that finishes all jobs.

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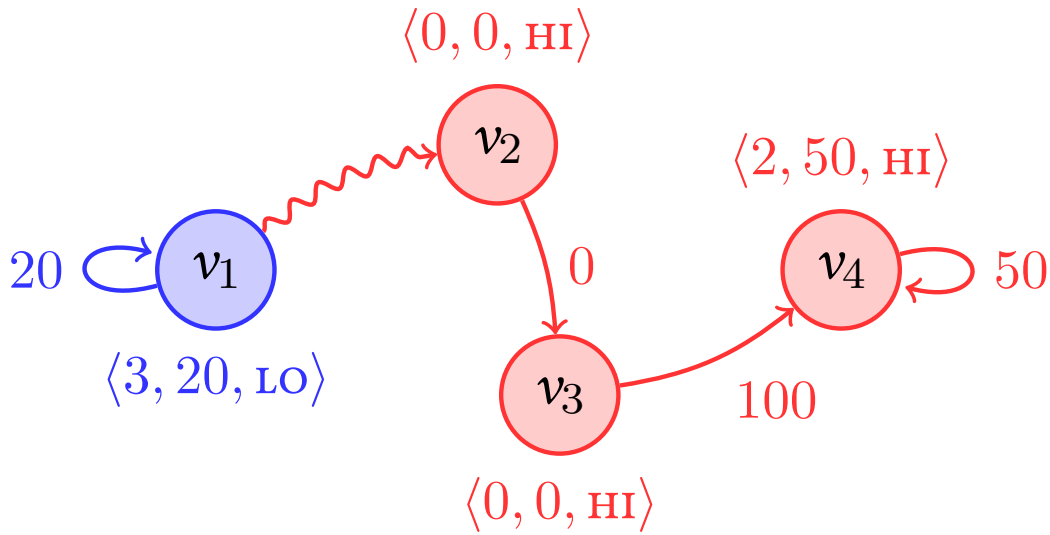

Task that drops active job at switch, then restarts after a grace period.

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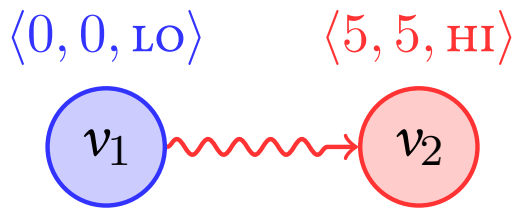

One-off job at mode switch, modeling overhead.

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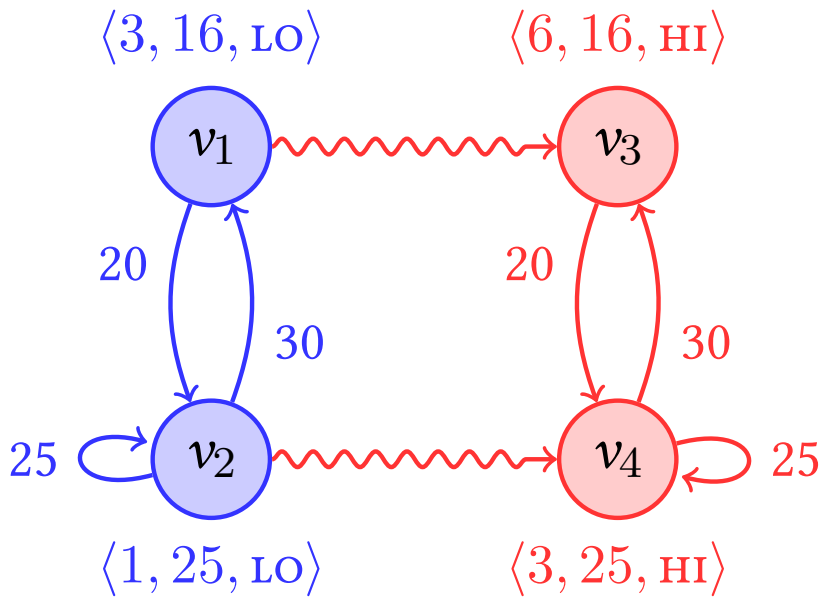
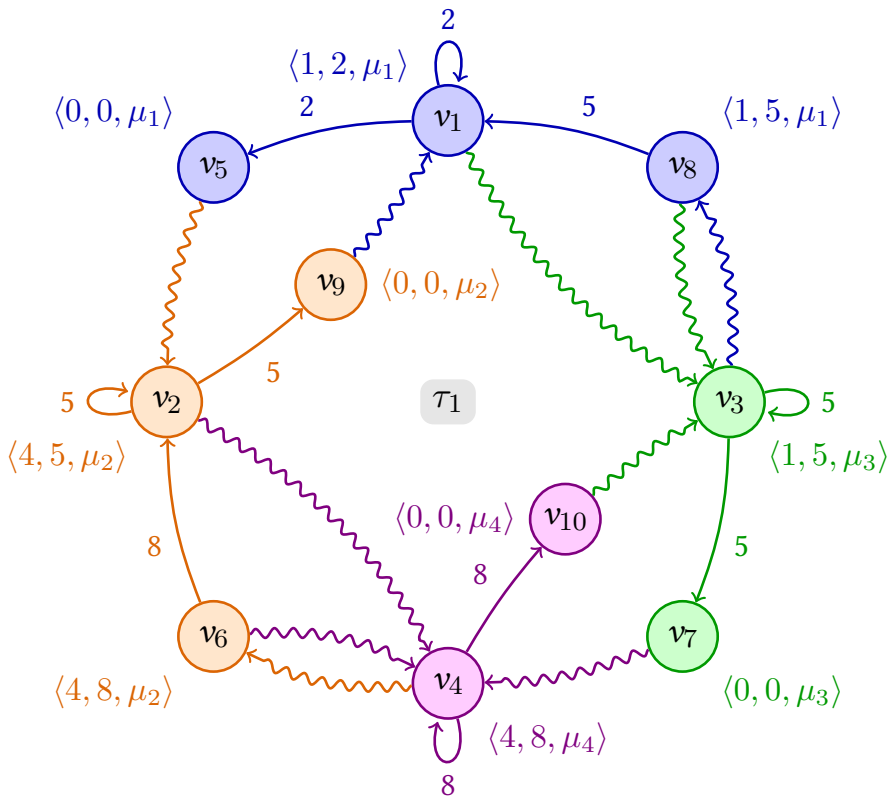
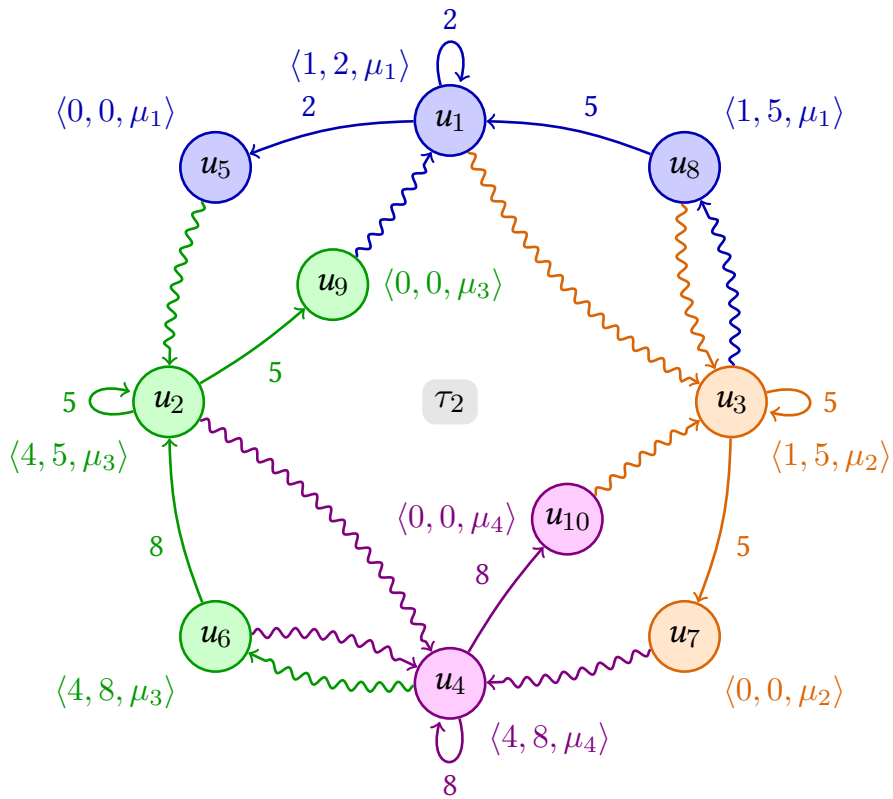


Direct extension of non-sporadic task to dual-criticality semantics.

Example: Period-Adaptive Tasks





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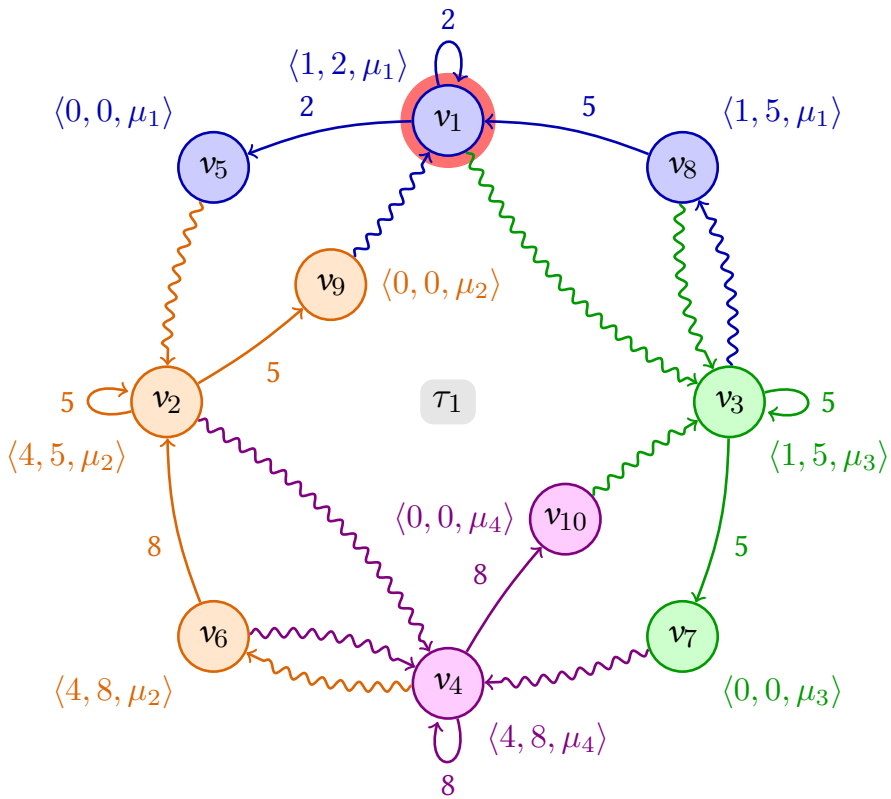

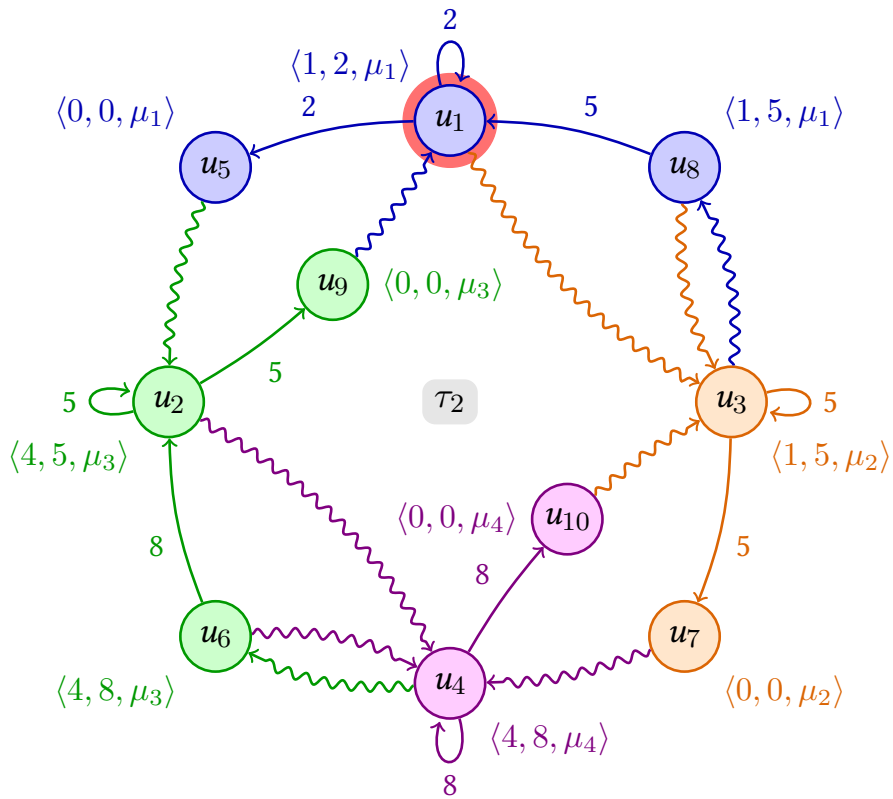

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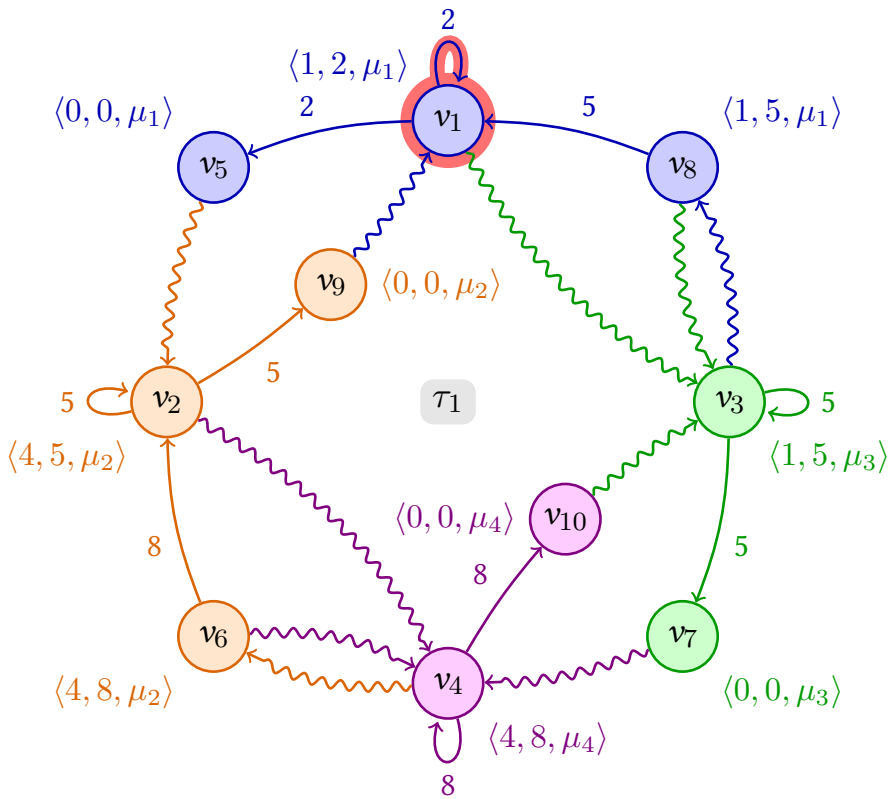

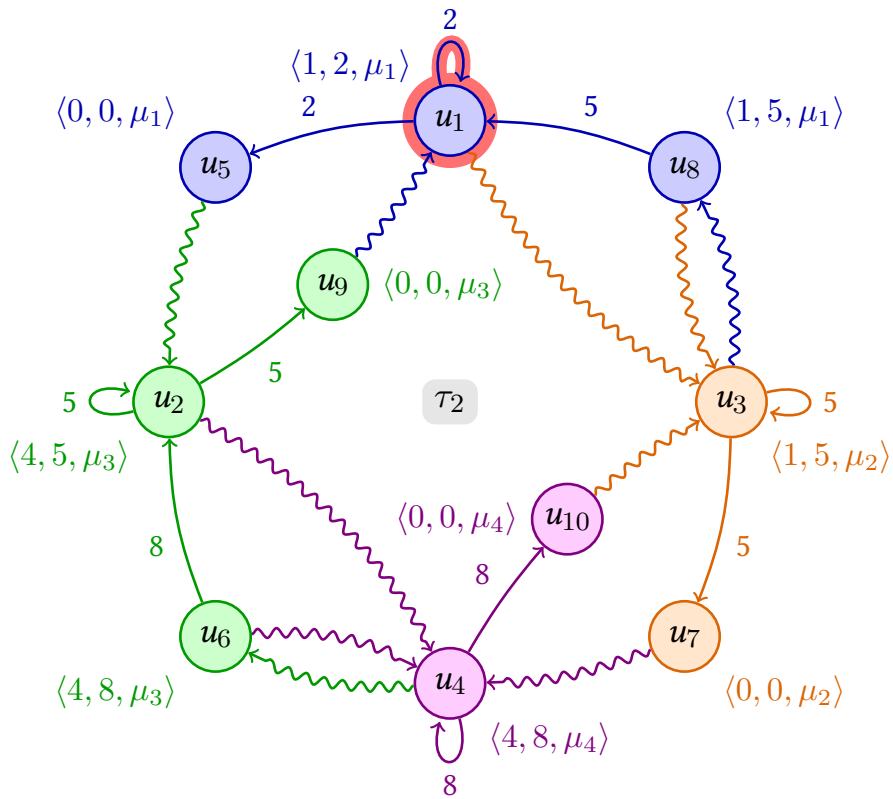

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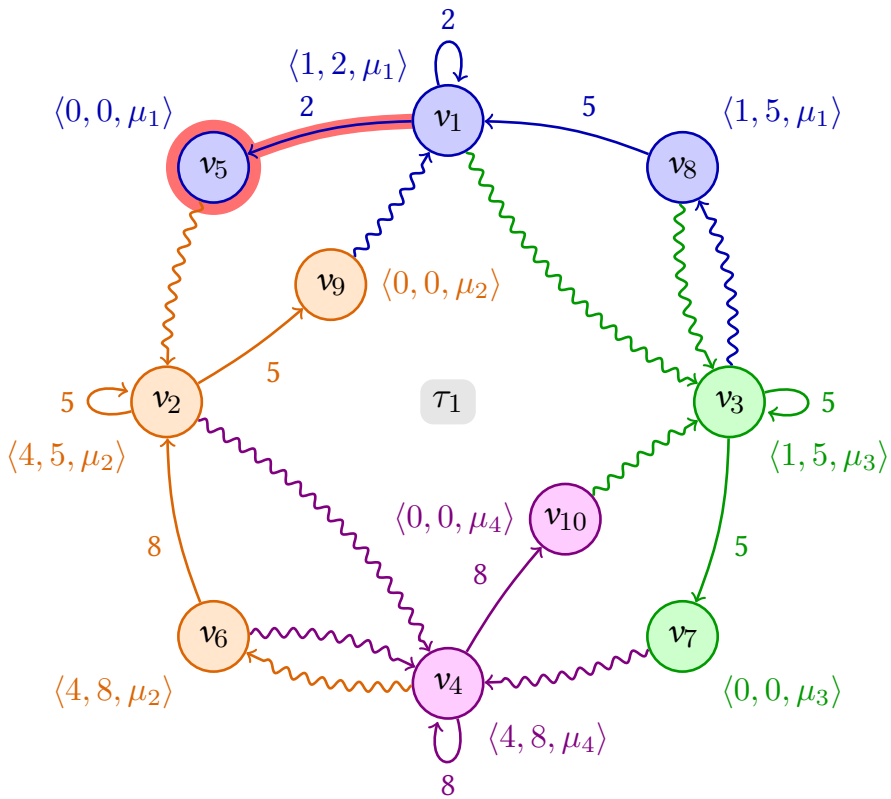

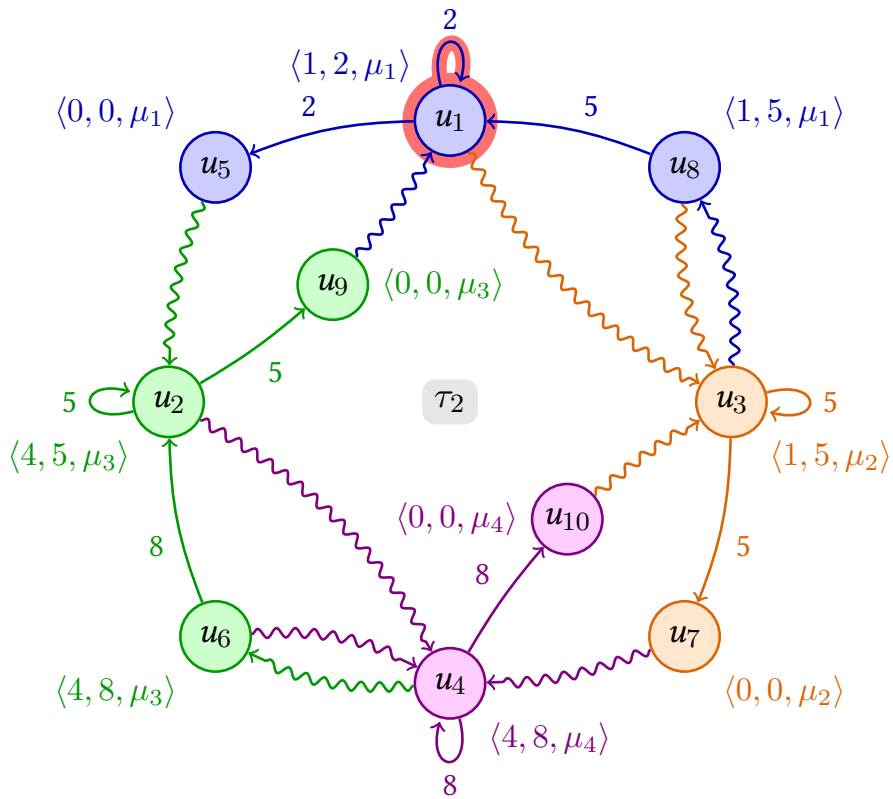

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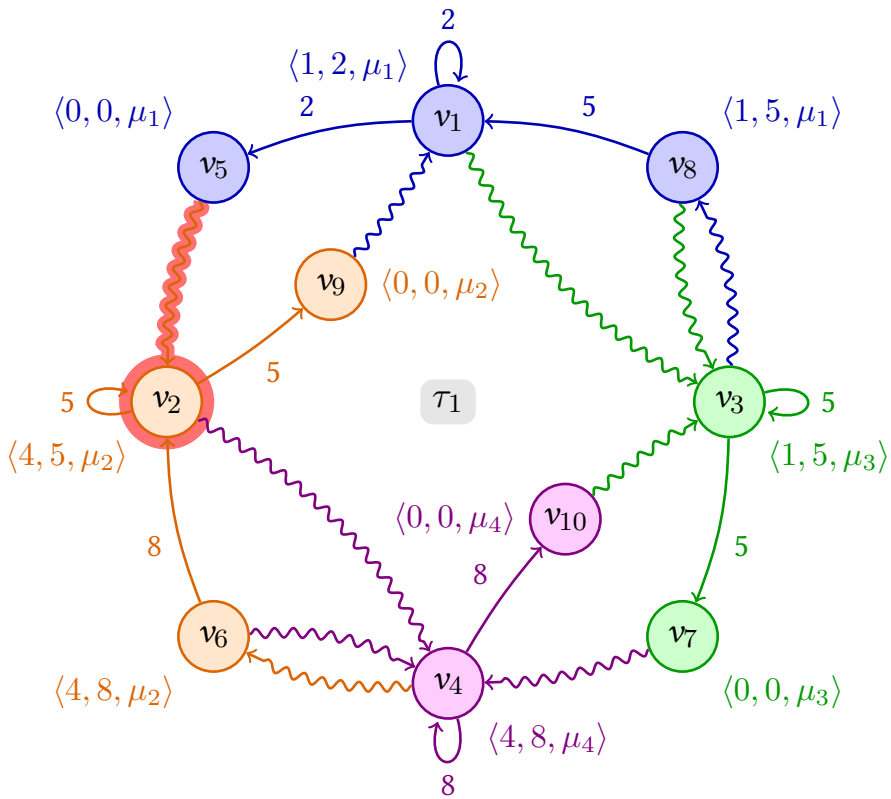

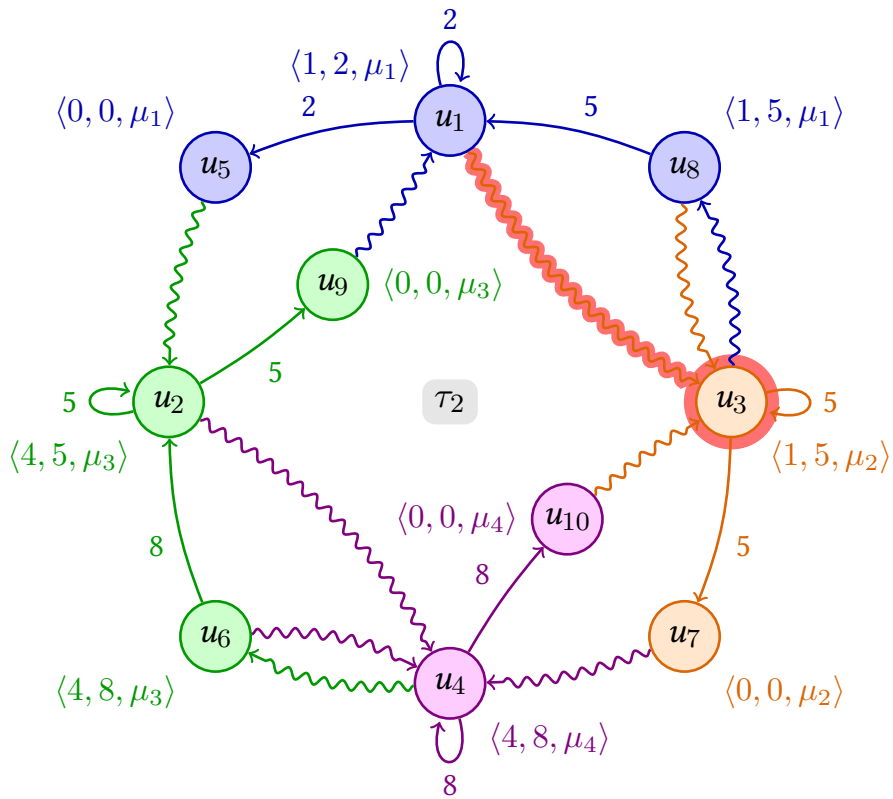

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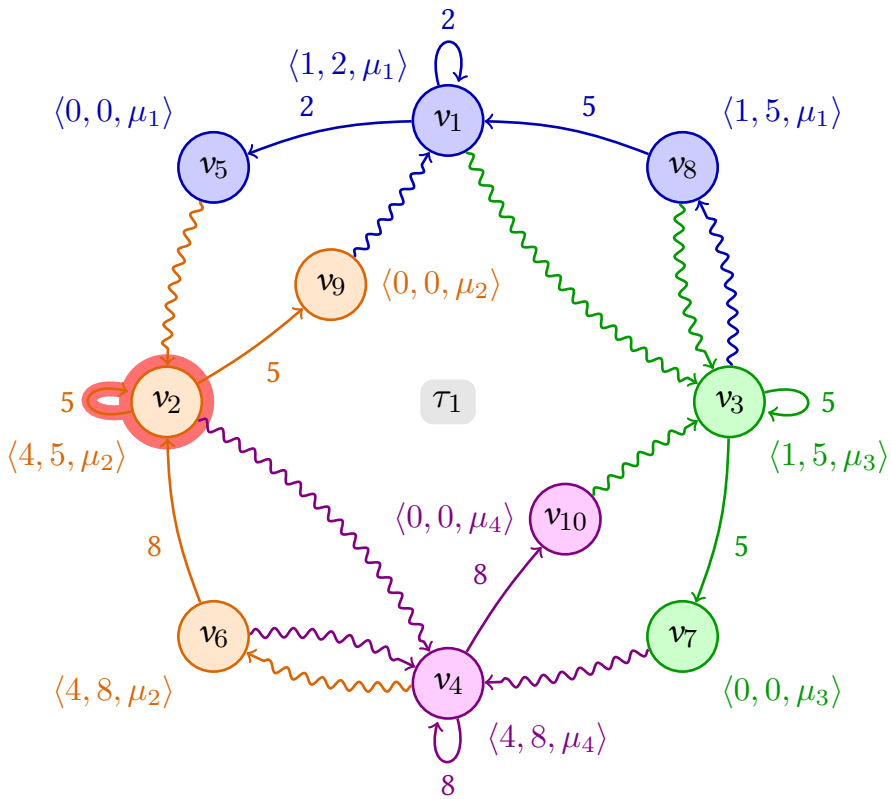

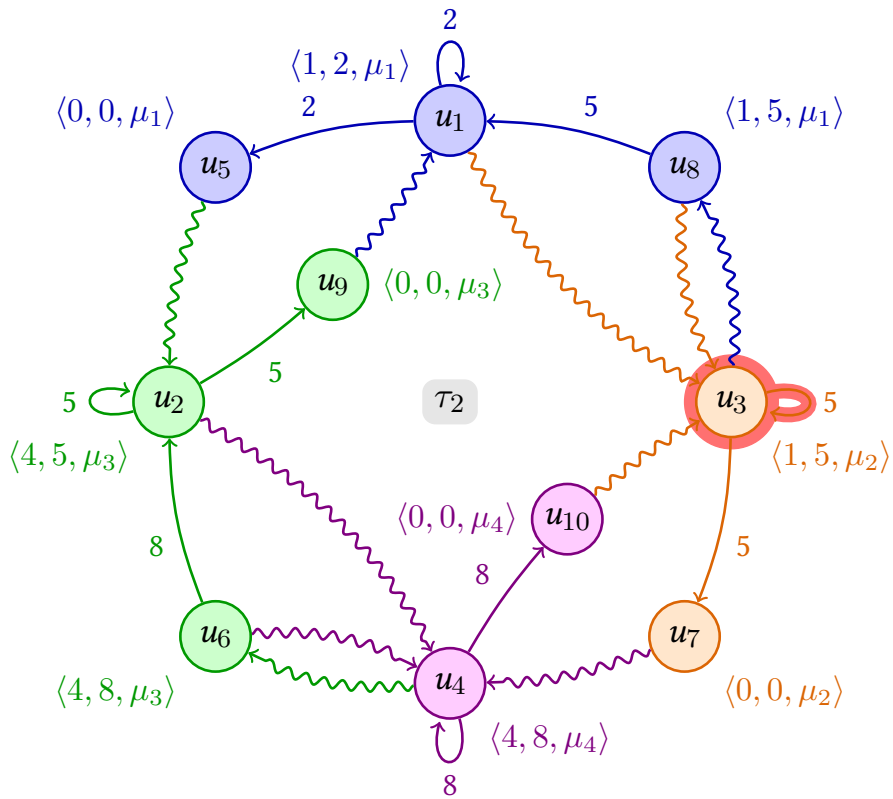

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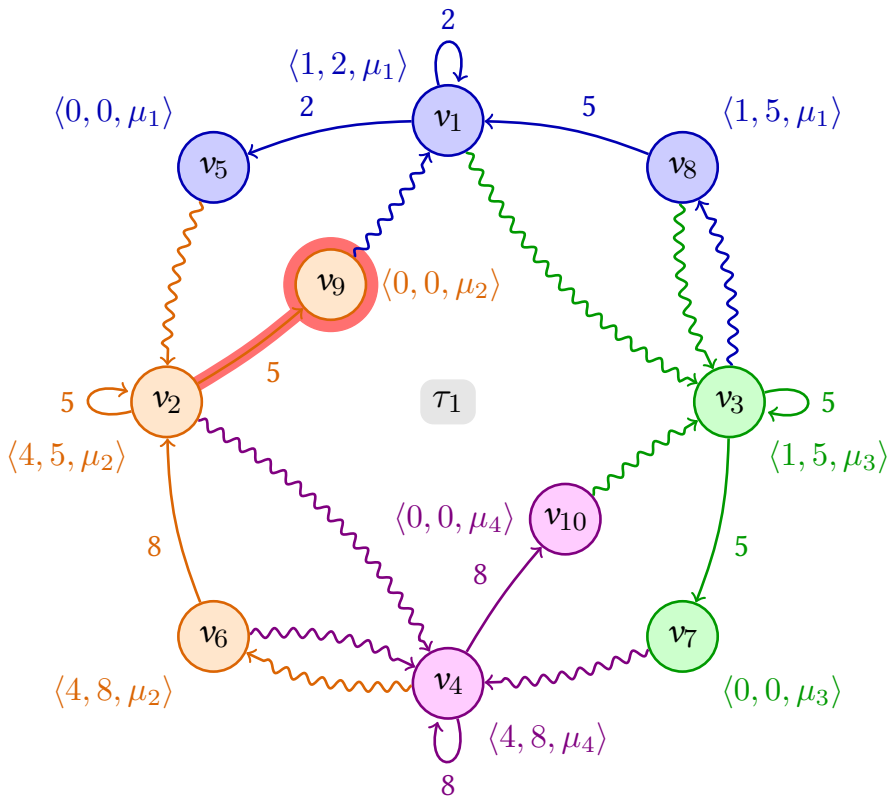

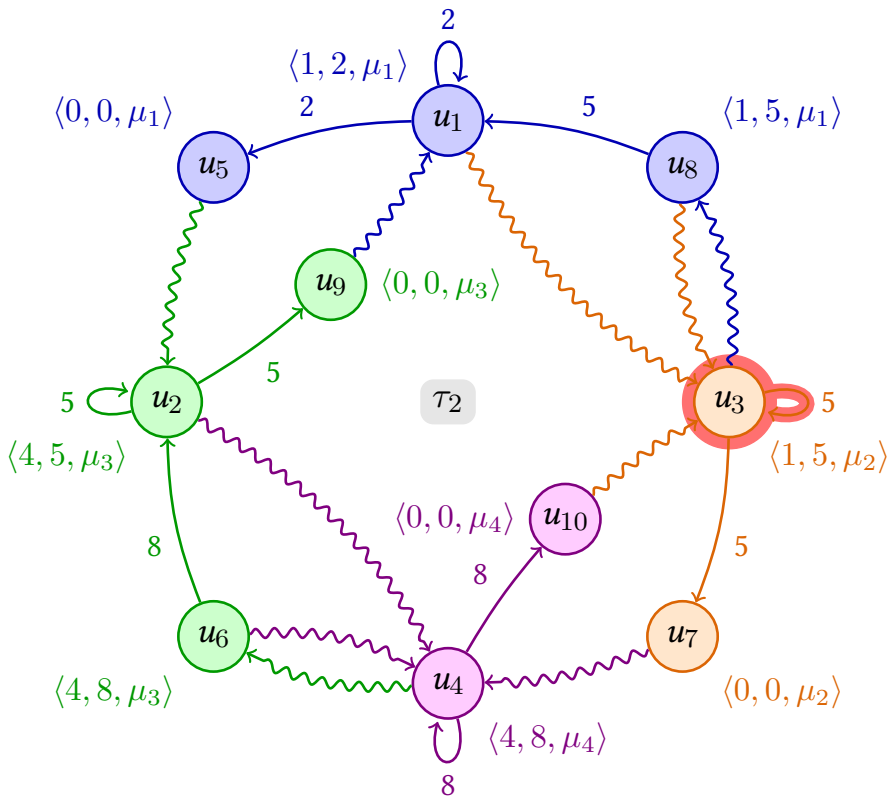

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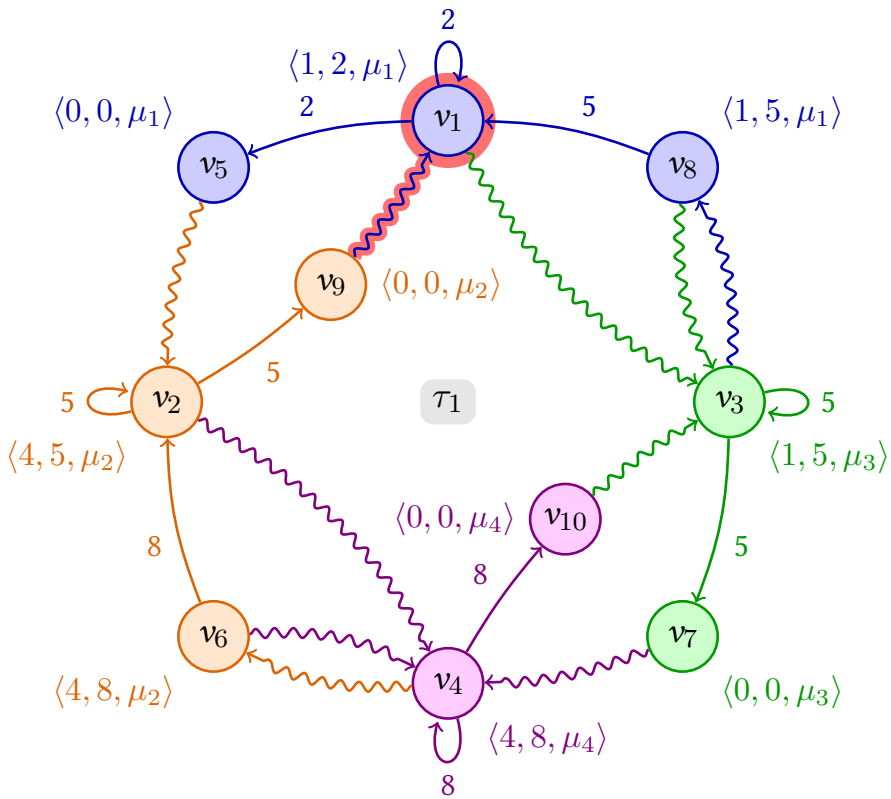

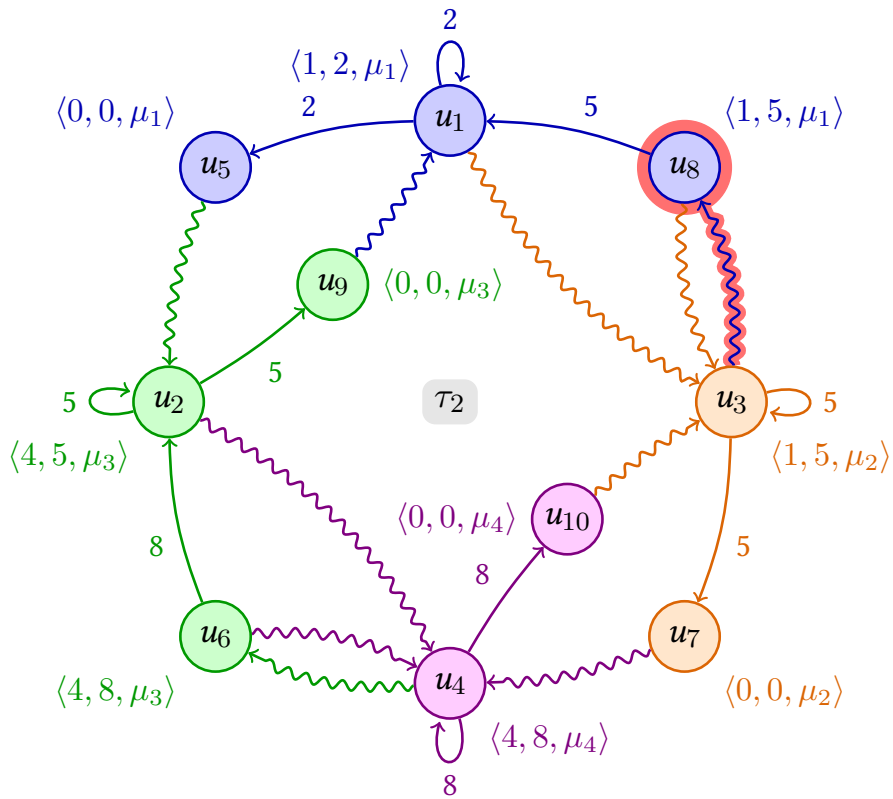

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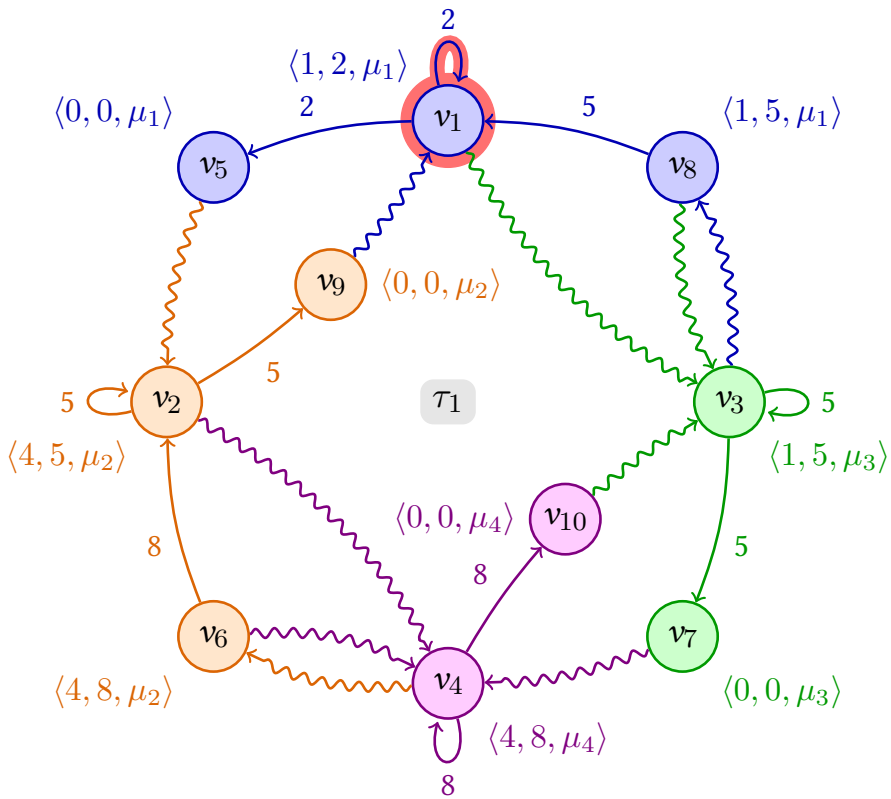

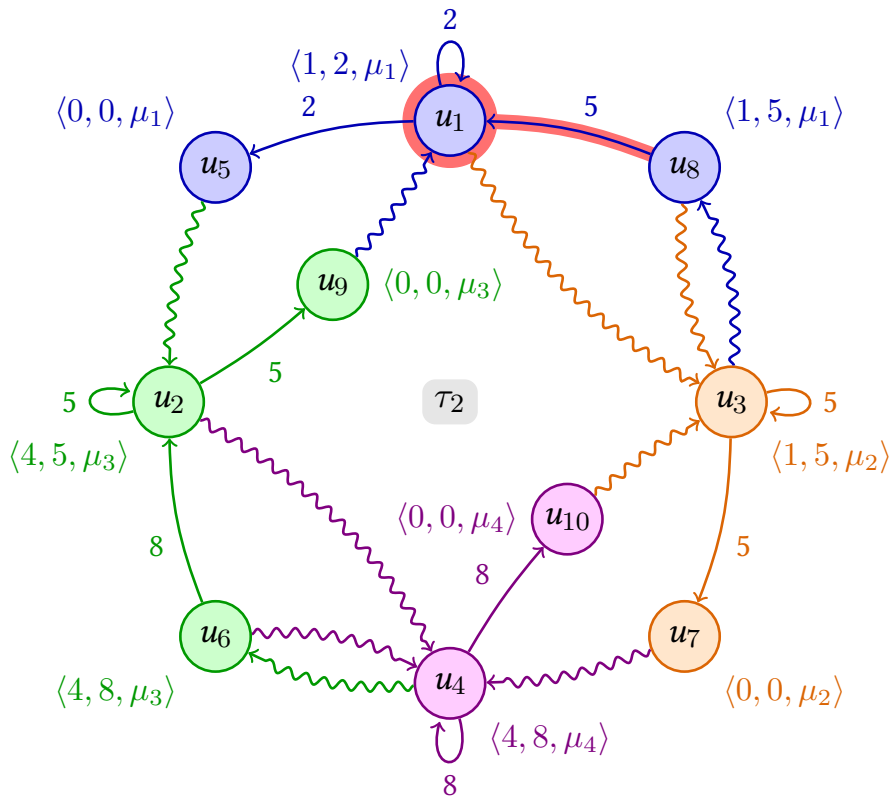

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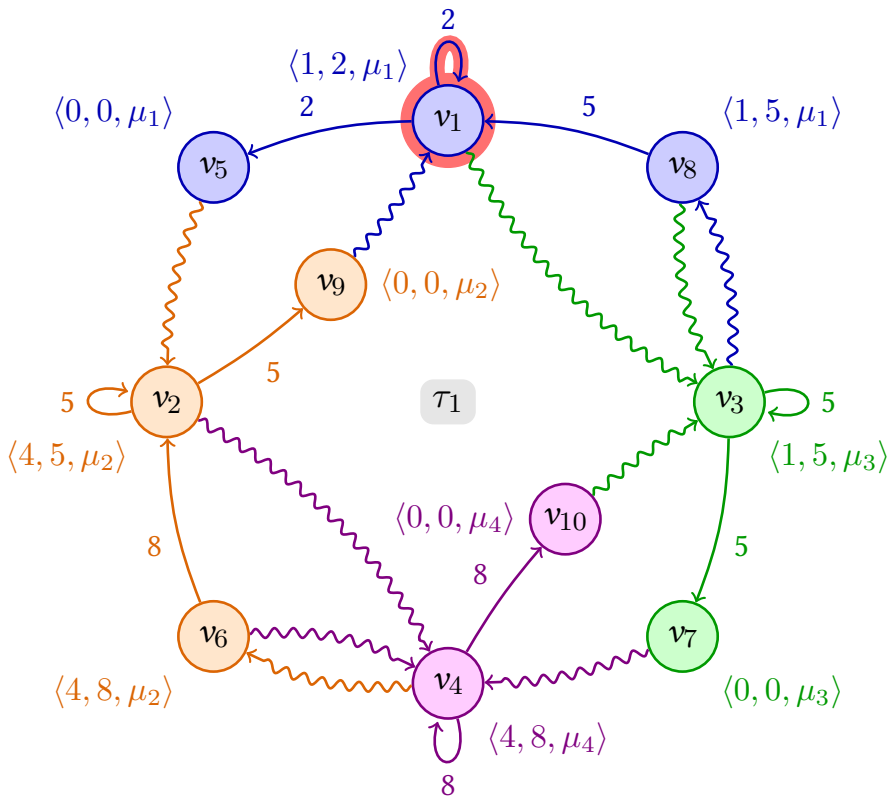

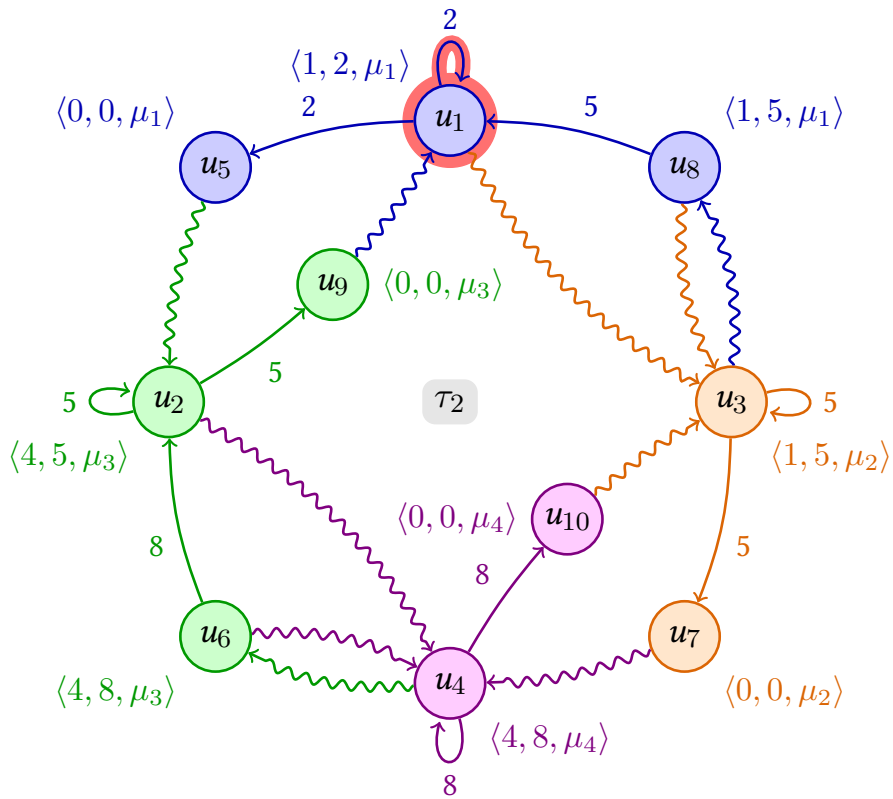

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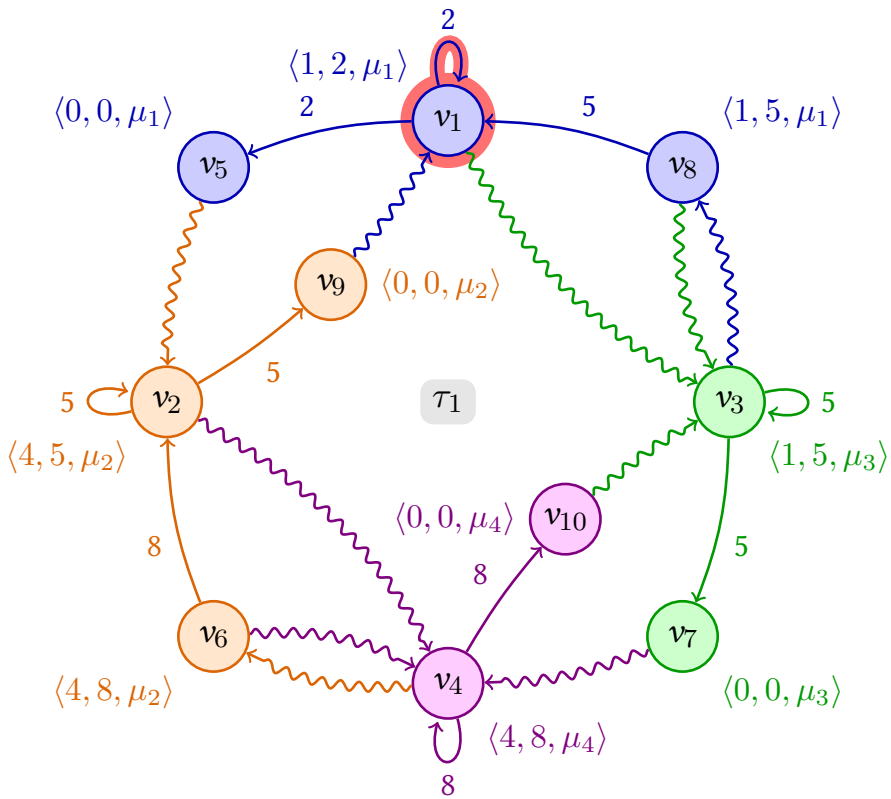

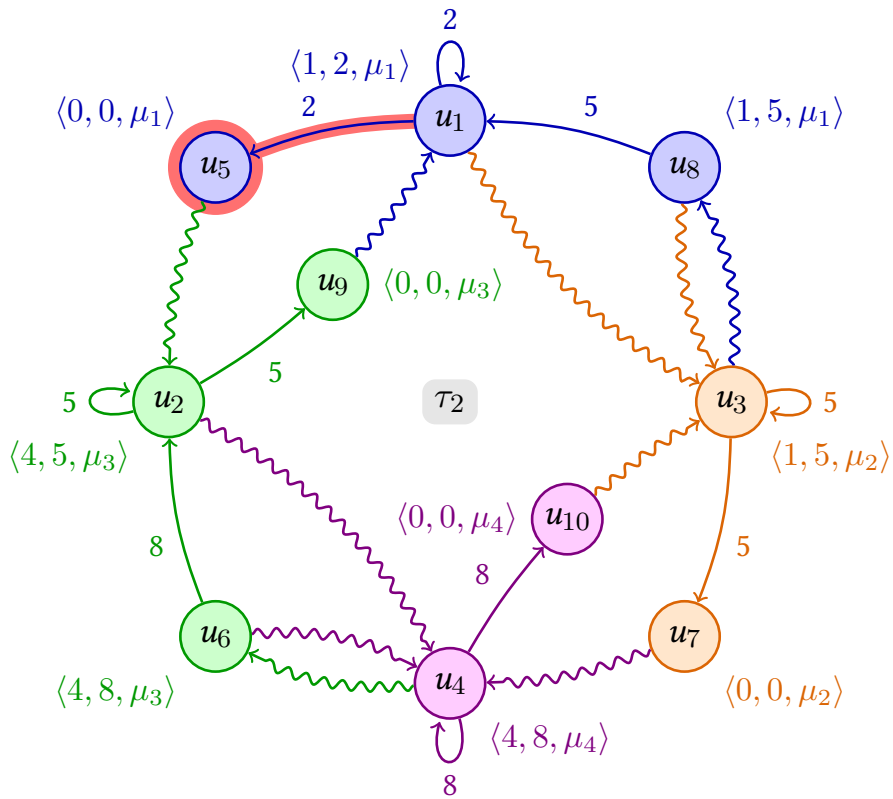

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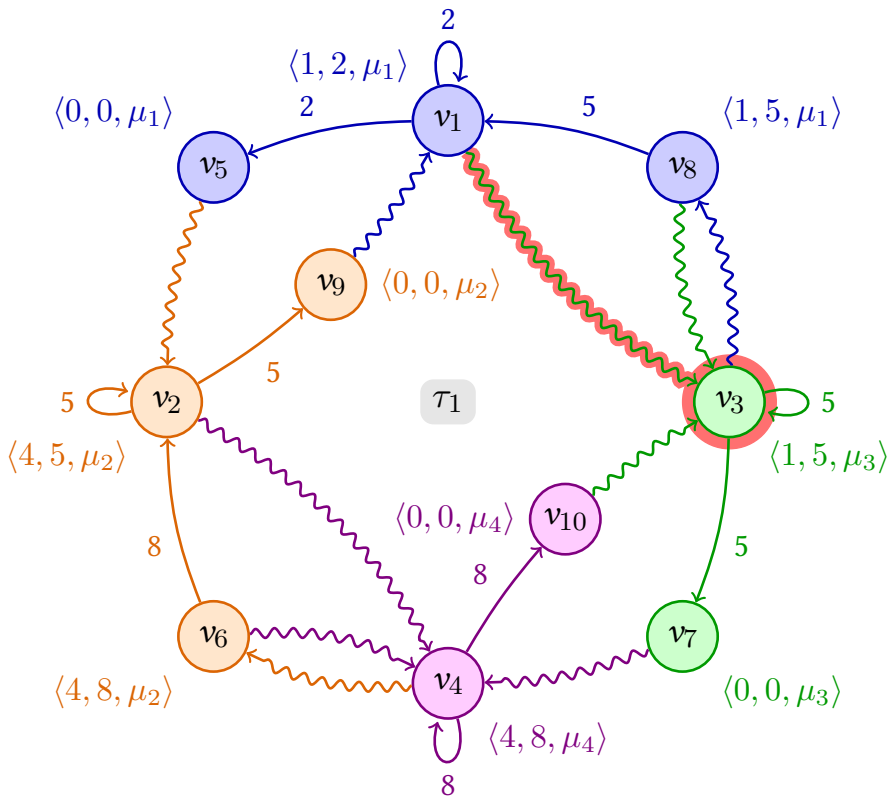

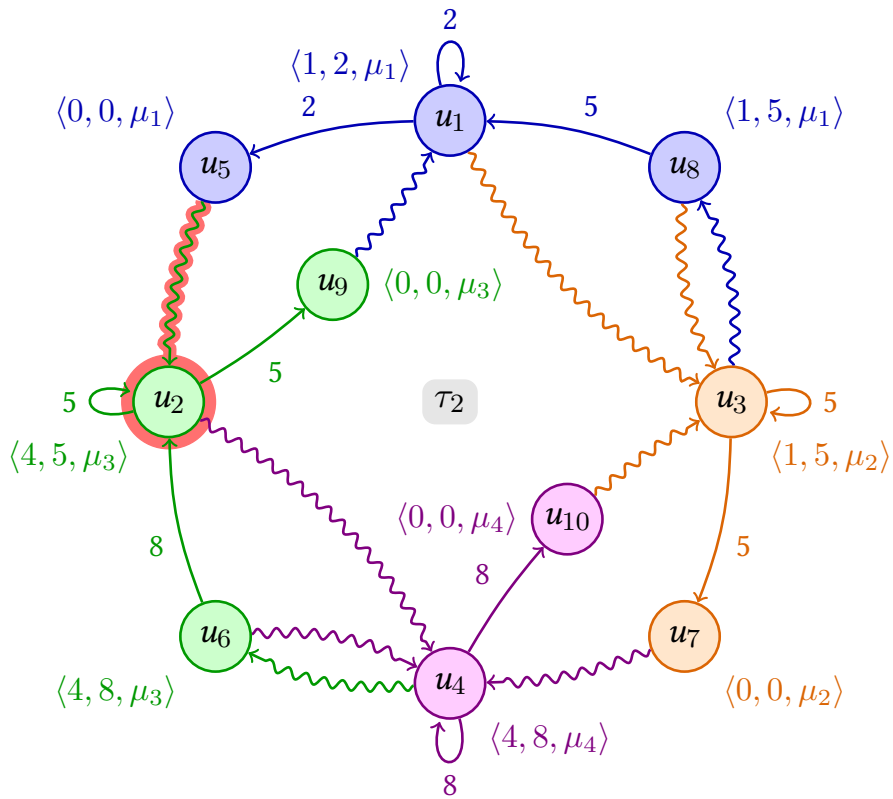

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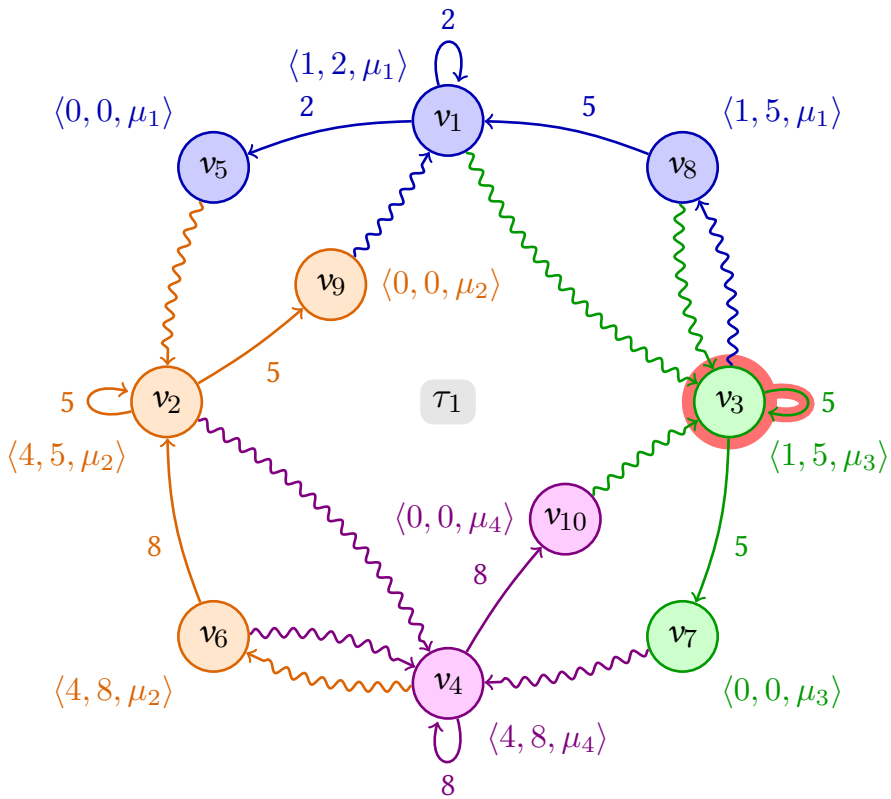

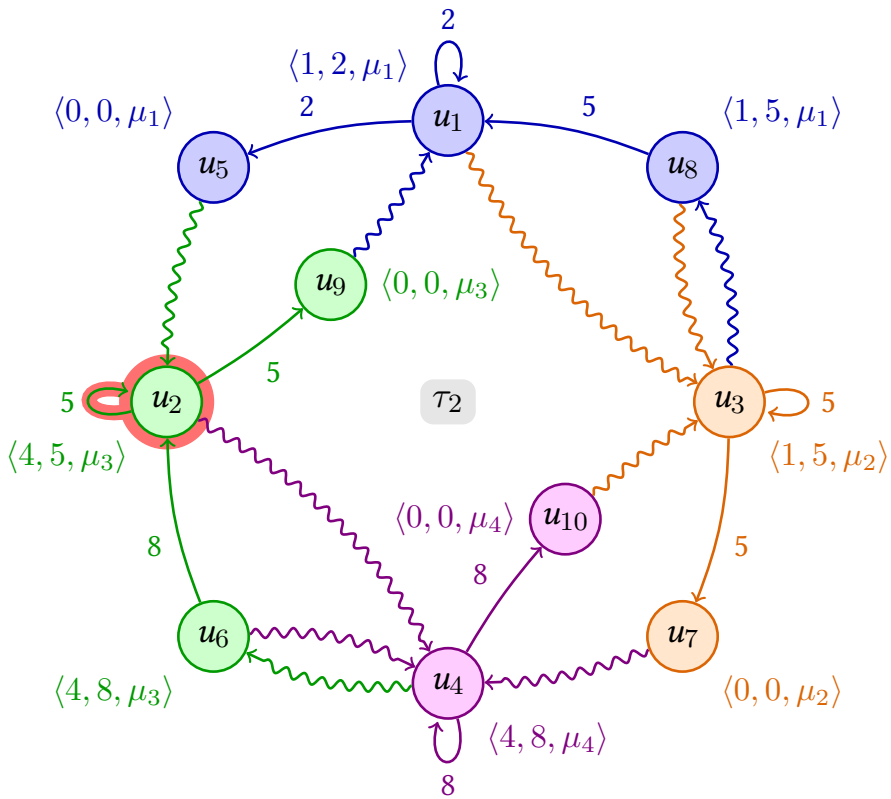

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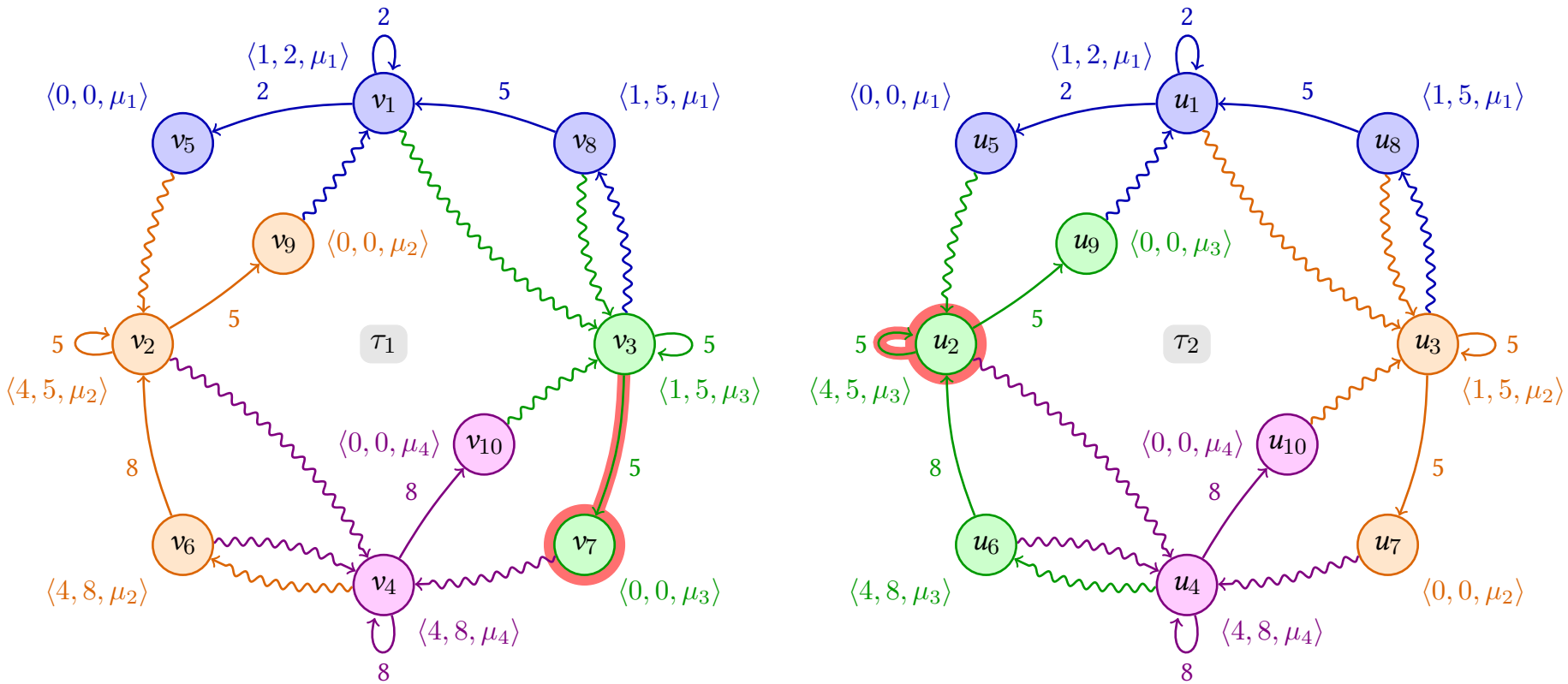

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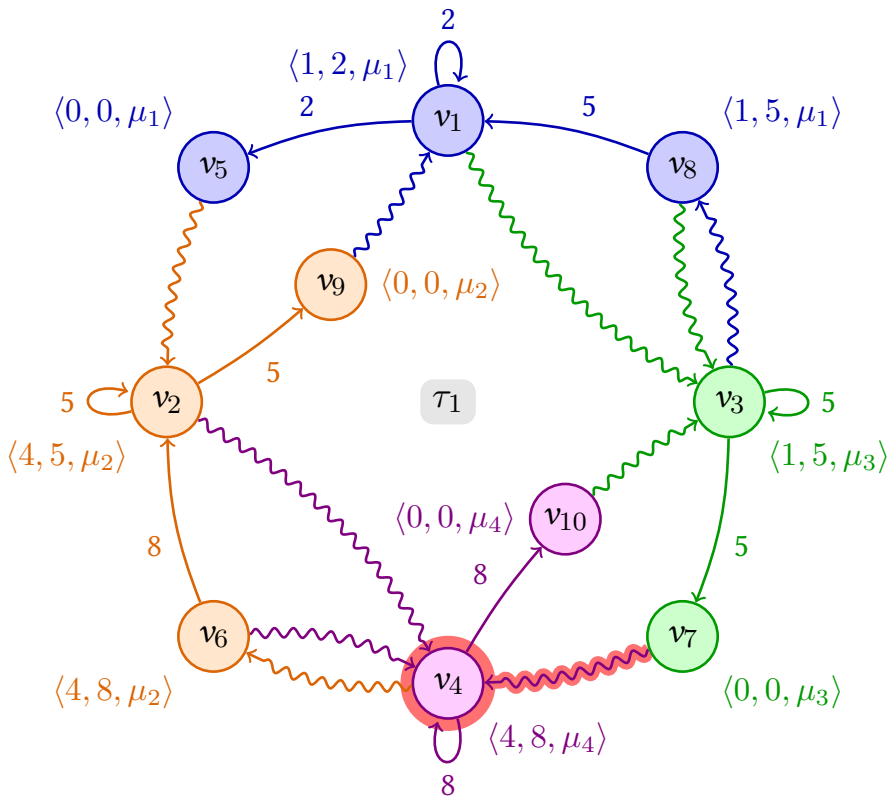

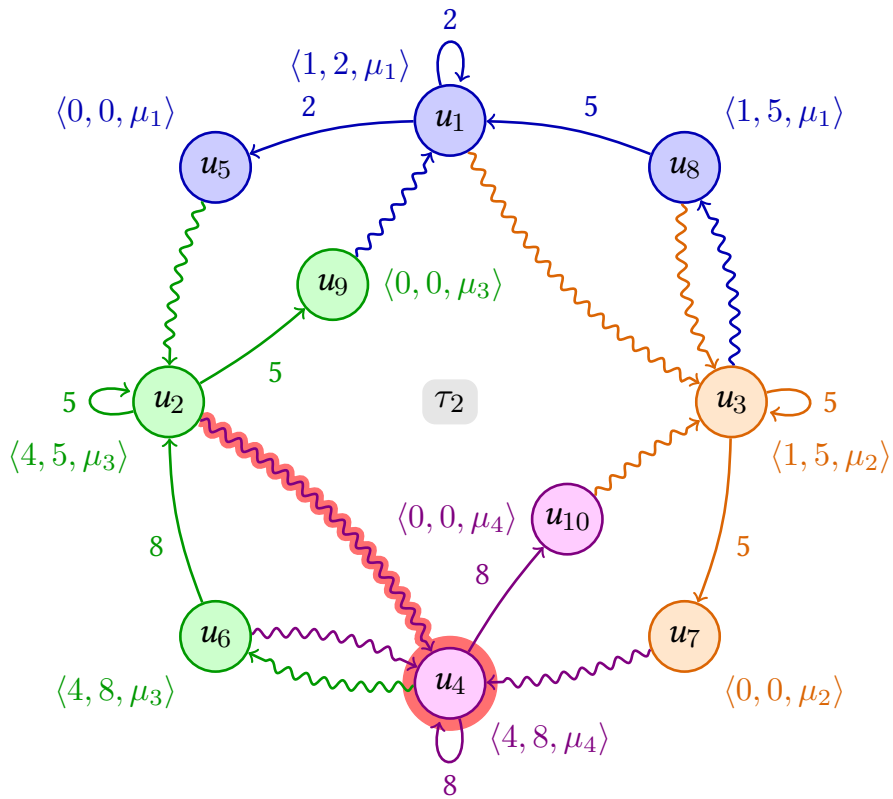

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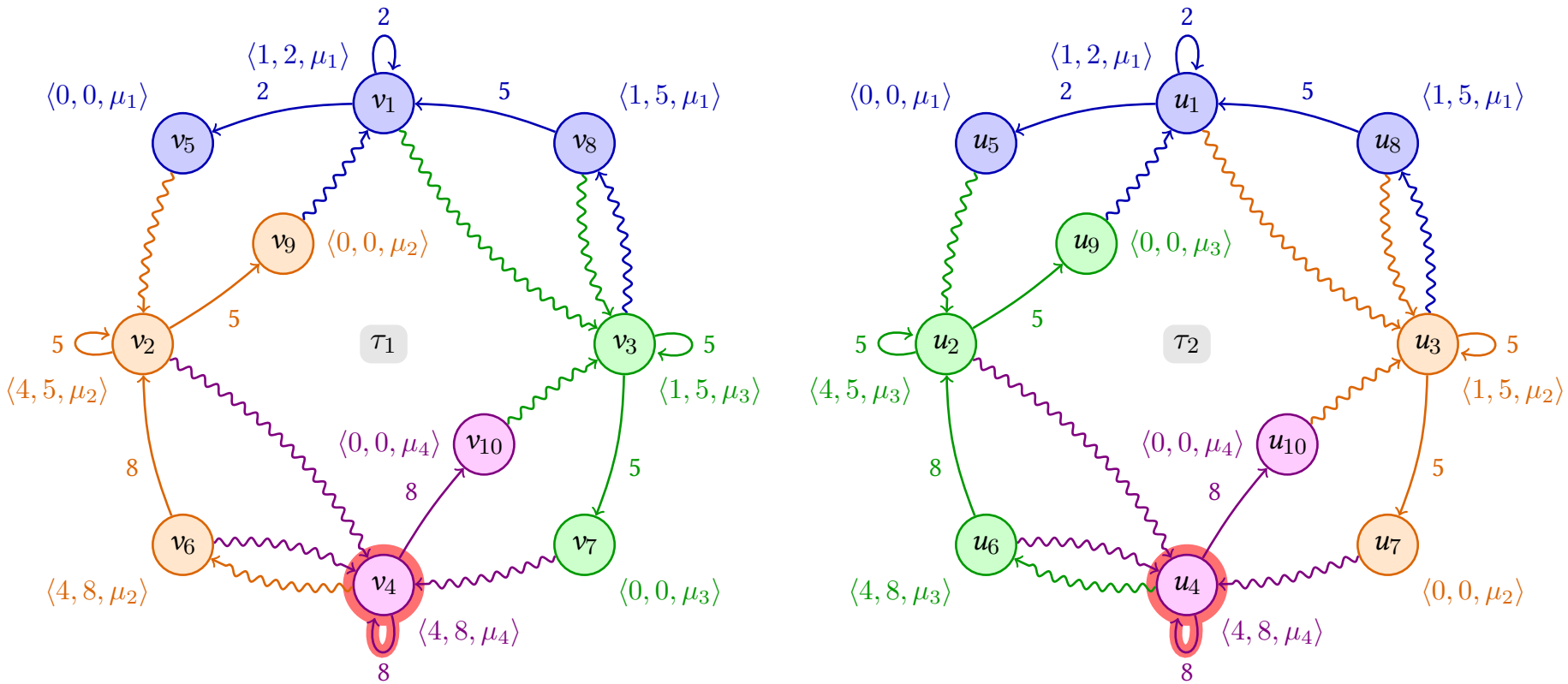
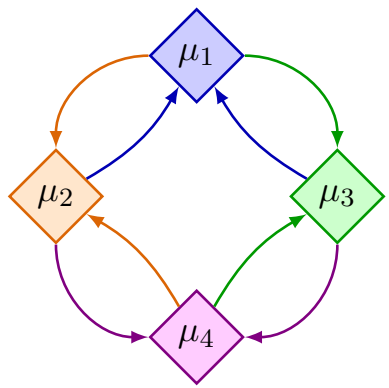


Outline of EDF Analysis

- Systematic approach: consider each mode switch separately.



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  1. EDF analysis of regular DRT tasks (*Stigge et al., 2011*) and
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- Both based on demand bound functions!

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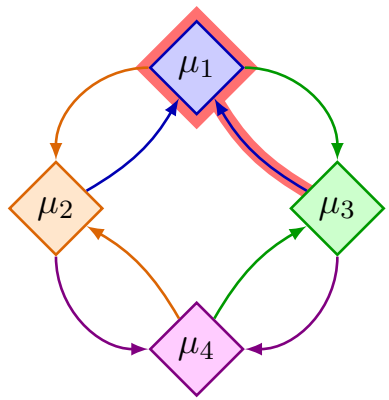

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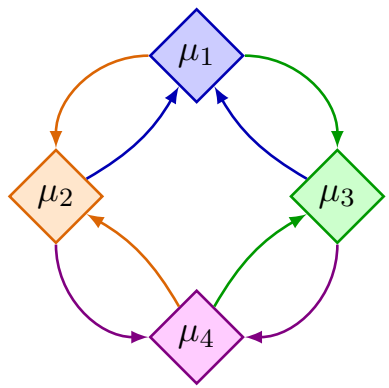

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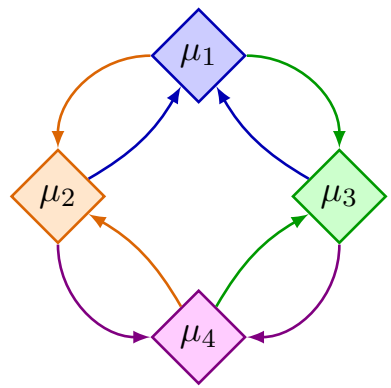

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$\forall$Thank you!

$\exists$Questions?