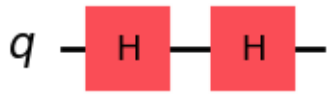
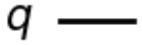
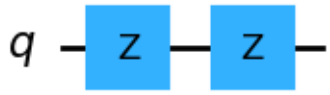
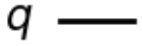
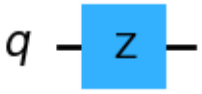
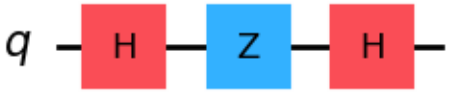
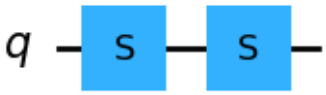
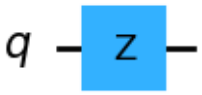
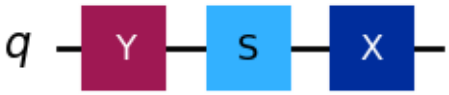
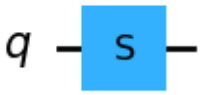
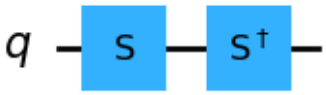
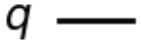
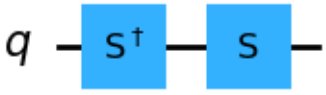
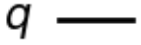
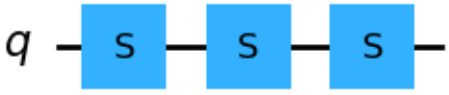
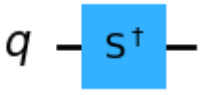
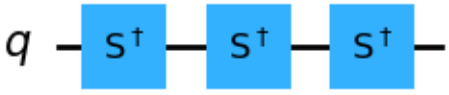
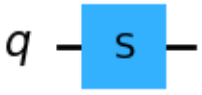
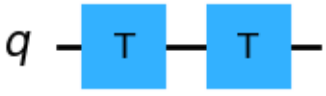
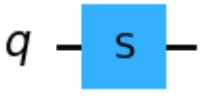
Catalogue of Equivalent Quantum Circuits

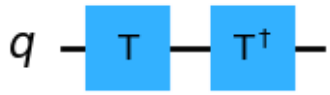
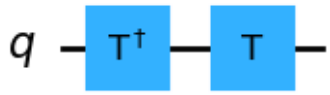
This document contains a list of equivalent quantum circuits used by QSimplify as simplification rules, compiled from various sources [1] [2] [3].

1, Single-qubit equivalences

Tabla 1: Single-qubit circuits and their simplified versions.

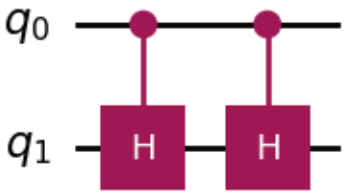
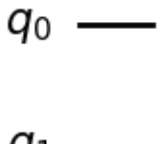
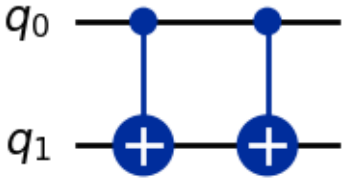
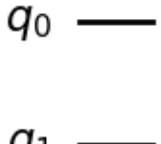
Circuit	Equivalent version (simplified)
	
	
	
	
	
	

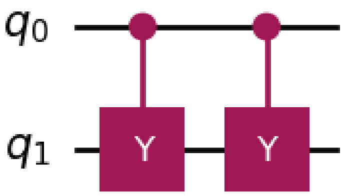
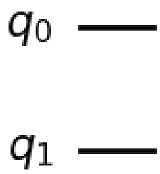
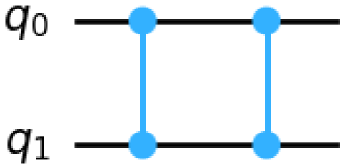
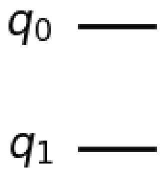
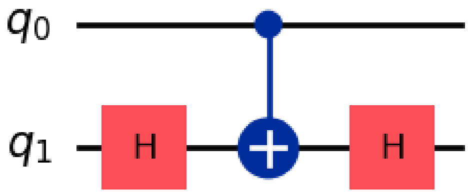
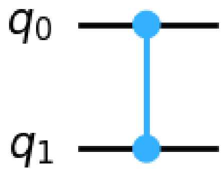
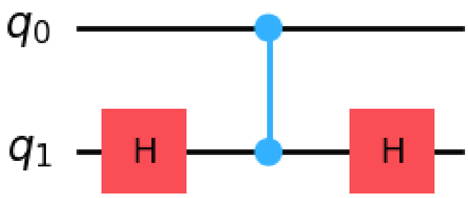
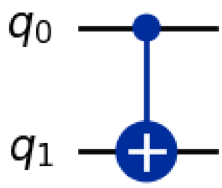
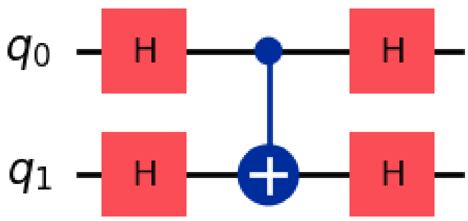
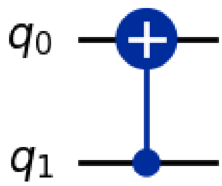
Circuit	Equivalent version (simplified)
	
	
	
	
	
	
	

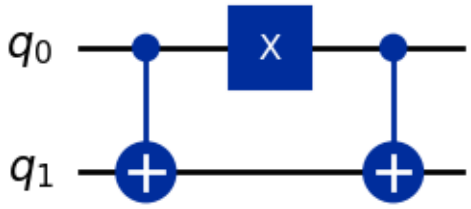
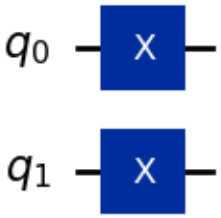
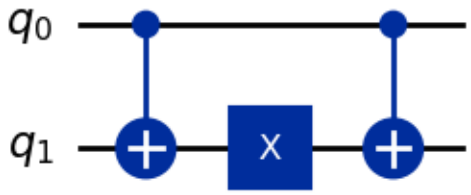
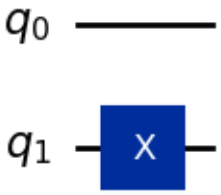
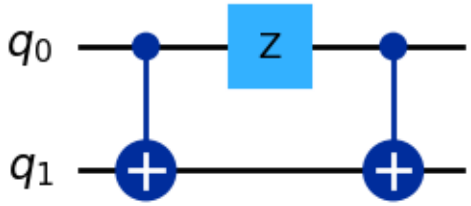
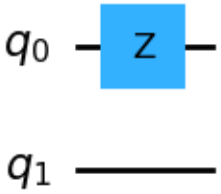
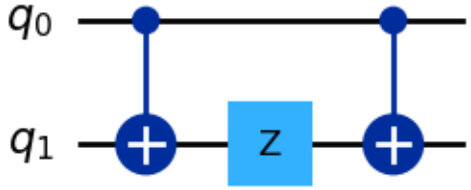
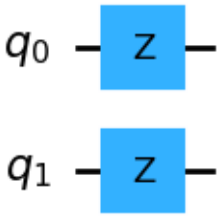
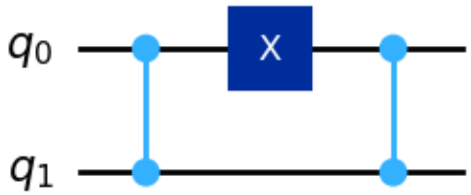
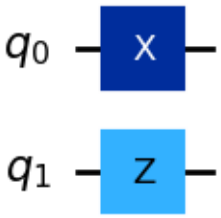
Circuit	Equivalent version (simplified)
	
	

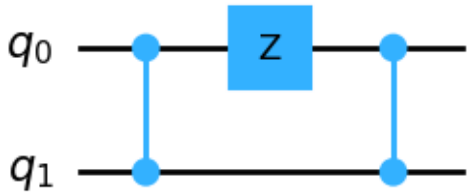
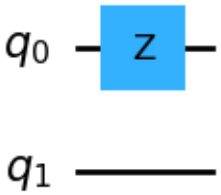
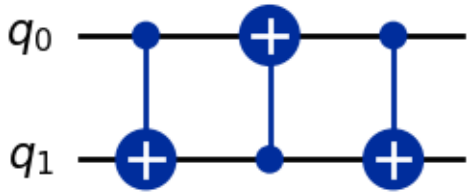
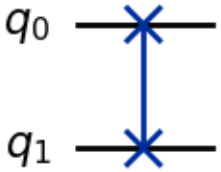
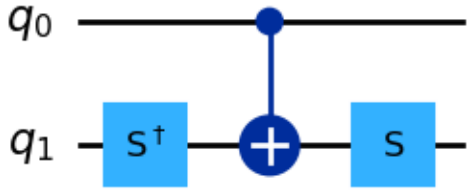
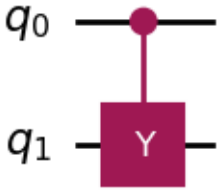
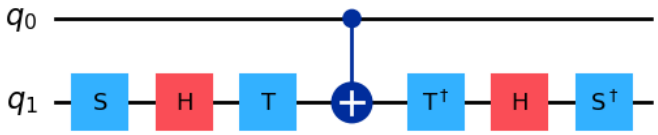
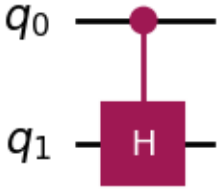
2. Two-qubit equivalences

Tabla 2: Two-qubit circuits and their simplified versions.

Circuit	Equivalent version (simplified)
	
	

Circuit	Equivalent version (simplified)
	
	
	
	
	

Circuit	Equivalent version (simplified)
	
	
	
	
	

Circuit	Equivalent version (simplified)
	
	
	
	

3. Three-qubit equivalences

Tabla 3: Three-qubit circuits and their simplified versions.

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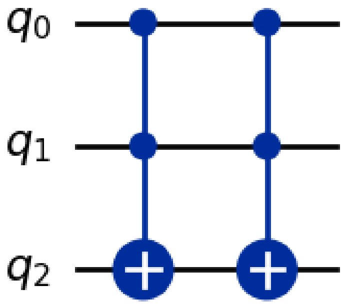
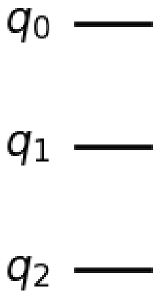
<tr><th>Circuit</th><th>Equivalent version (simplified)</th></tr>
<tr><td> 
</td><td> 
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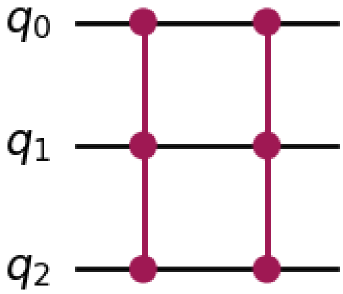
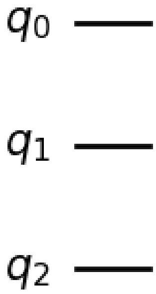
<tr><td> 
</td><td> 
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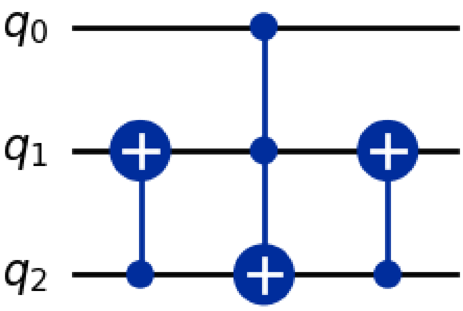
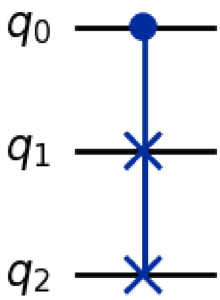
<tr><td> 
</td><td> 
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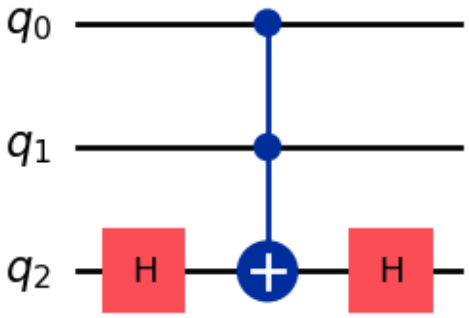
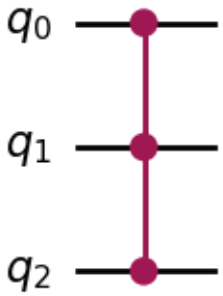
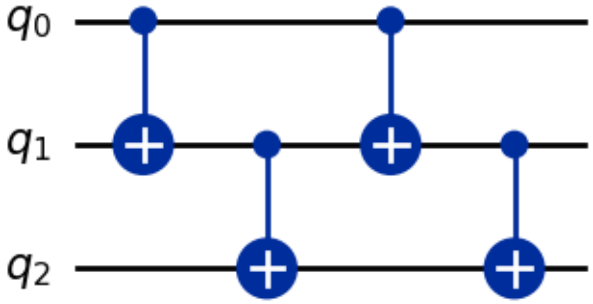
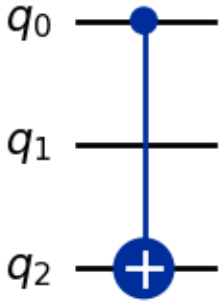
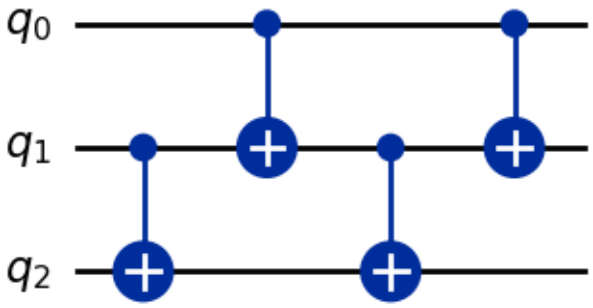
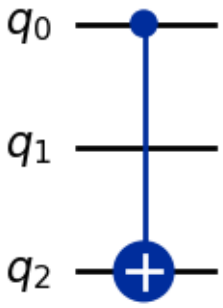
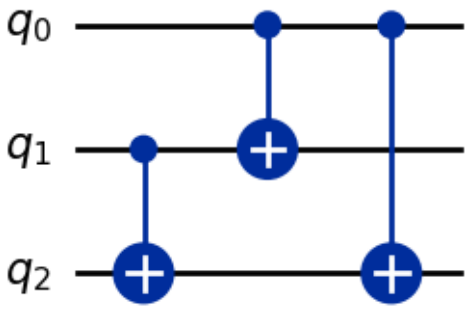
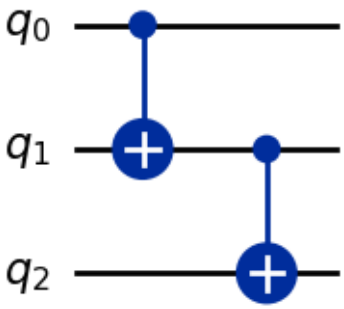
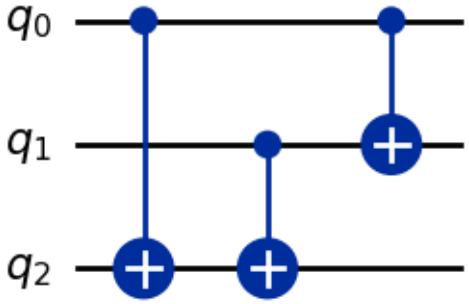
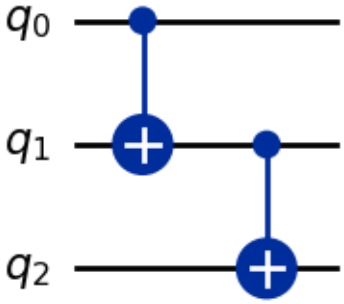
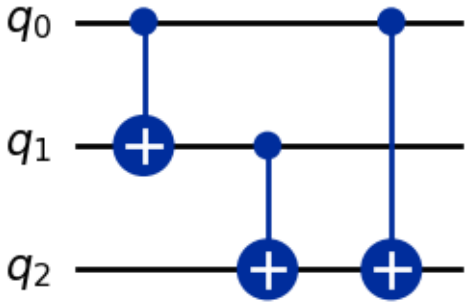
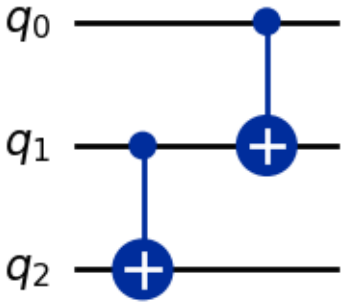
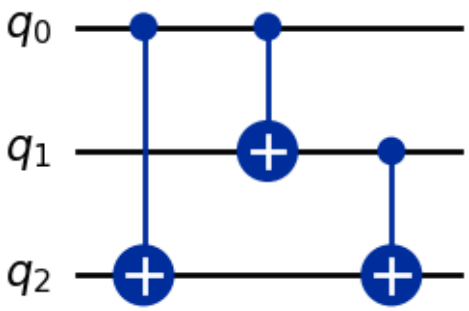
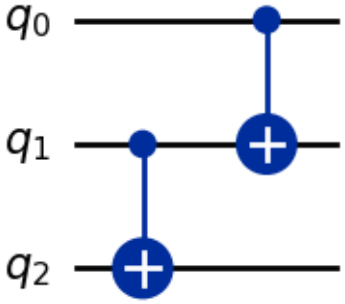
Circuit	Equivalent version (simplified)
	
	
	

Circuit	Equivalent version (simplified)
	
	
	

Circuit	Equivalent version (simplified)
	

1. References

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