

WDE2017 (Multi-paritite Entanglement)

Edward Kim

February 3, 2021

Contents

1	Equivalences of classes of multipartite entangled states.	1
1.1	SLOCC-equivalence classes through invariants	2
1.1.1	Cayley Hyper-determinant	2
1.1.2	Invariants through homogeneous polynomials	2
1.1.3	Monogamy of Entanglement	2
1.1.4	Infinite classes for 4-qubit systems	2
2	Asymptotic manipulation of pure multipartite entanglement	2
2.1	Minimal reversible entanglement generating set (MREGS) . .	2
2.1.1	For tripartite state	2
2.1.2	Conversion rates from GHZ state from Geometric Complexity	2
3	Entanglement Measures	3
3.1	Geometric Measure	3
3.2	Hierarchies of Separability for Mixed States	3
4	More Invariants	3
5	Non-locality	3

1 Equivalences of classes of multipartite entangled states.

- Local unitary equivalence of multipartite pure states (Kraus)
- Everything You Always Wanted to Know About LOCC(But Were Afraid to Ask) (Chitambar et al)

1.1 SLOCC-equivalence classes through invariants

1.1.1 Cayley Hyper-determinant

- Classification of multipartite entangled states by multidimensional determinants (Miyake)

1.1.2 Invariants through homogeneous polynomials

- Classification of multipartite entanglement in all dimensions (Gour, Wallach)

1.1.3 Monogamy of Entanglement

- Distributed Entanglement (Coffman et al.)

1.1.4 Infinite classes for 4-qubit systems

- Four qubits can be entangled in nine different ways. (Verstrate et al.)

2 Asymptotic manipulation of pure multipartite entanglement

2.1 Minimal reversible entanglement generating set (MREGS)

2.1.1 For tripartite state

- Reversibility of Local Transformations of Multiparticle Entanglement (Linden et al.)
- On the structure of a reversible entanglement generating set for three-partite states (Acin et al.)

2.1.2 Conversion rates from GHZ state from Geometric Complexity

- Tripartite entanglement transformations and tensor rank (Chtambar et al.)
- Nondeterministic quantum communication complexity: the cyclic equality game and iterated matrix multiplication (Buhrman)
- Asymptotic entanglement transformation between W and GHZ states (Vrana, Christandl)

3 Entanglement Measures

3.1 Geometric Measure

- Geometric measure of entanglement and applications to bipartite and multipartite quantum states (Wei, Goldbart)

3.2 Hierarchies of Separability for Mixed States

- Complete hierarchies of efficient approximations to problems in entanglement theory (Eisert et al.)
- Distinguishing separable and entangled states (Doherty et al)
- Separability and distillability of multiparticle quantum systems (Dur et al)
- Classification of multi-qubit mixed states: separability and distillability properties (Dur et al)

4 More Invariants

- Algebraic invariants of five qubits (Luque, Thibon)

5 Non-locality

- Extreme quantum entanglement in a superposition of macroscopically distinct states (Mermin)