DQC1 — Theorem 2 → LLSD

LLSD — Theorem 1 → DQC1

SUES — Brandão [28] → DQC1

SUES — Section III.A → LLSD

LLSD ⇄ ABNE: Efficient sparse access to Δ_k^G, e.g., when graph clique dense. (see Section III.A.1)

Input matrix is Δ_k^G (see Section III.A.1)

LGZ → ABNE: Efficient preparation of ρ_k^G, e.g., when graph clique dense. (see Section II.B)

ABNE → BNE: Smallest nonzero eigenvalue of Δ_k^G is $\Omega(1/\mathrm{poly}(n))$. (see Section II.A.1)

Section III.A

Point cloud → *Mesh at grouping-scale ϵ* → **Graph** → *Identifying cliques as simplices* → **Simplicial complex**

Homology

$$\partial_k^G \;,\; \Delta_k^G$$

Linear operators

Computing dimensions of kernels

$$(\beta_0, \beta_1, \beta_2, \dots, \beta_{n-1})$$

Betti numbers, i.e., list of number of holes, voids and k-dimensional counterparts