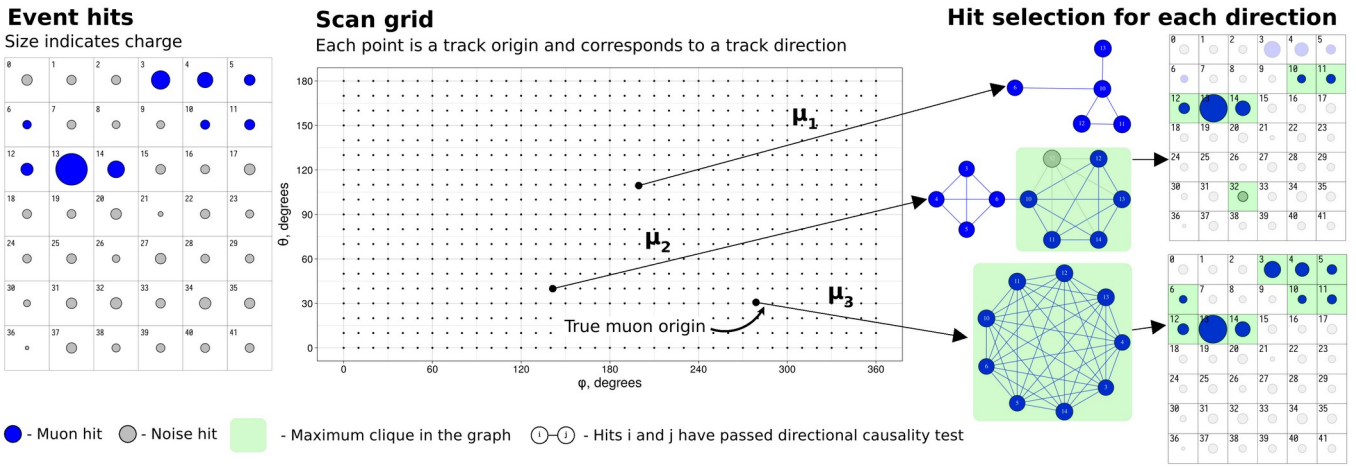

- **Prefilter.** A set of hits is preselected for processing. Processing time in the following stages increases quadratically with the number of hits, so at this stage we want to remove easily identifiable noise.
- Initialization. We select a set of directions in the sky. Currently, a rectangular grid in spherical coordinates.
- **Scan**. For each direction in the grid a subset of hits is selected, based on the assumption that coordinates of the direction correspond to the direction of the particle. First, we construct a causality graph of the event - a graph where each hit is represented by a vertex and two vertices share an edge if the corresponding hits satisfy causality conditions. Next, we use the Bron-Kerbosch algorithm to find the maximal cliques in the causality graph - the largest subsets of vertices where all vertices are connected to each other and only select hits from largest clique.
- **Clique selection.** All hits in cliques are fitted to the corresponding track model. Cliques smaller then the largest or second-largest ones are ignored.
- **Output**. The output is the 1) the track prefit corresponding to the direction with minimum M-estimator and 2) hits selected for this vertex.

Sample	Average purity	Average efficiency
Atmospheric neutrino sample (for previously used approach)	0.99	0.5
Atmospheric neutrino sample	0.95	0.95
High energy (E −2) neutrino sample	0.98	0.74
High energy (E −2) neutrino sample (at least 8 track hits)	0.98	0.89
Multicluster atmospheric neutrino sample	0.98	0.87
Multicluster atmospheric neutrino sample (at least 8 track hits)	0.98	0.9