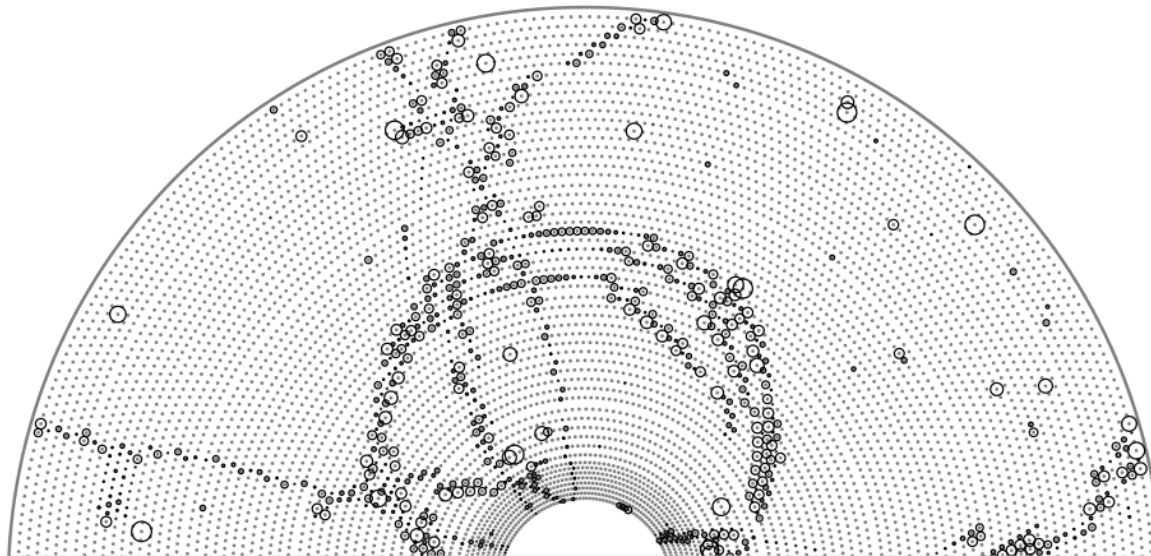


# Applying Legendre transformation method for Belle II tracking - Update

Viktor Trusov

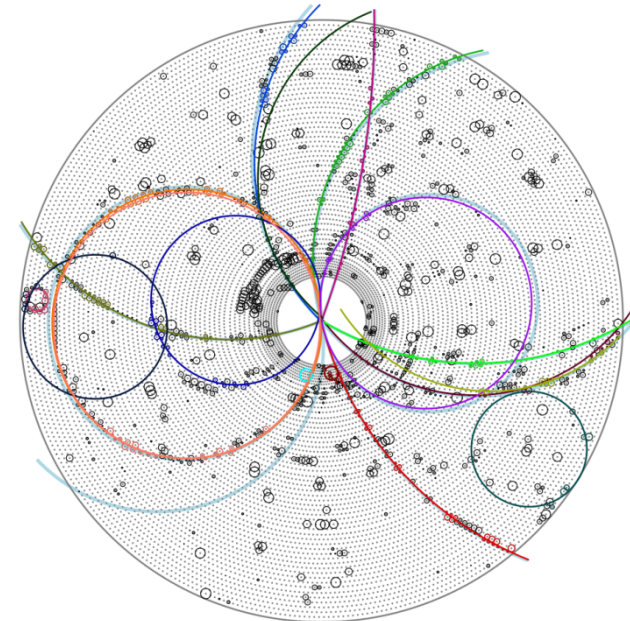
04.07.2014, bi-weekly tracking meeting

Karlsruhe Institute of Technology (KIT)



# Conformal transformation with respect to point on track

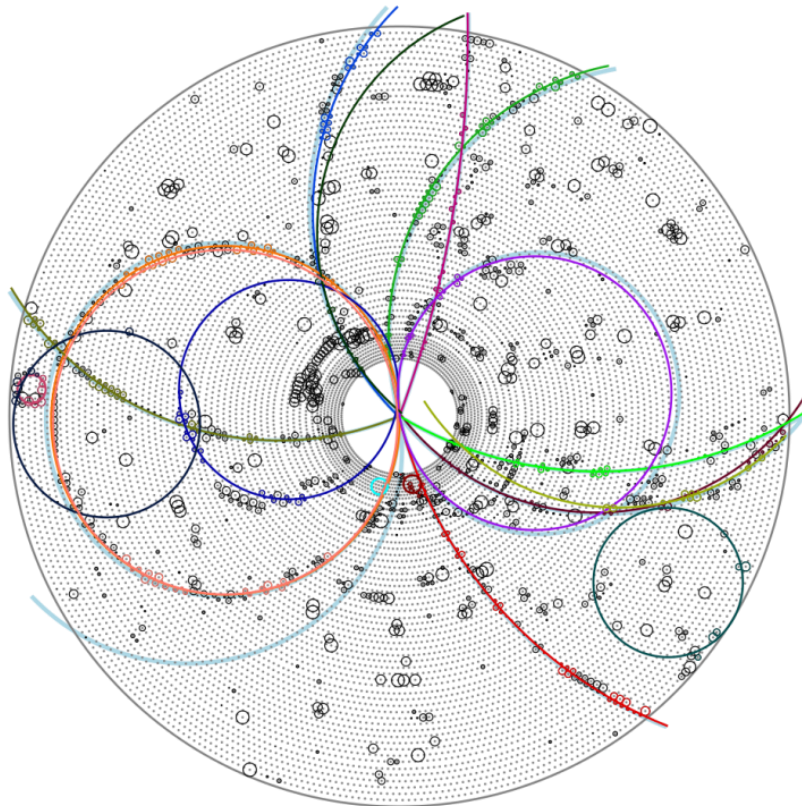
- Tracks could be extended by applying conformal transformation to the hits with respect to chosen point (rather than  $(0;0)$ ):
  - New point selected as a point on track trajectory where it approaches to the hit at minimal distance
- After, fast Hough search applied
- Could be used for tracks extension with new unused hits
  - but usually most of hits likely left by particle already assigned to some track (tracklet)
- Its not efficient approach for basic pattern recognition, but (as Martin suggested) it could be used for backscattered track reconstruction



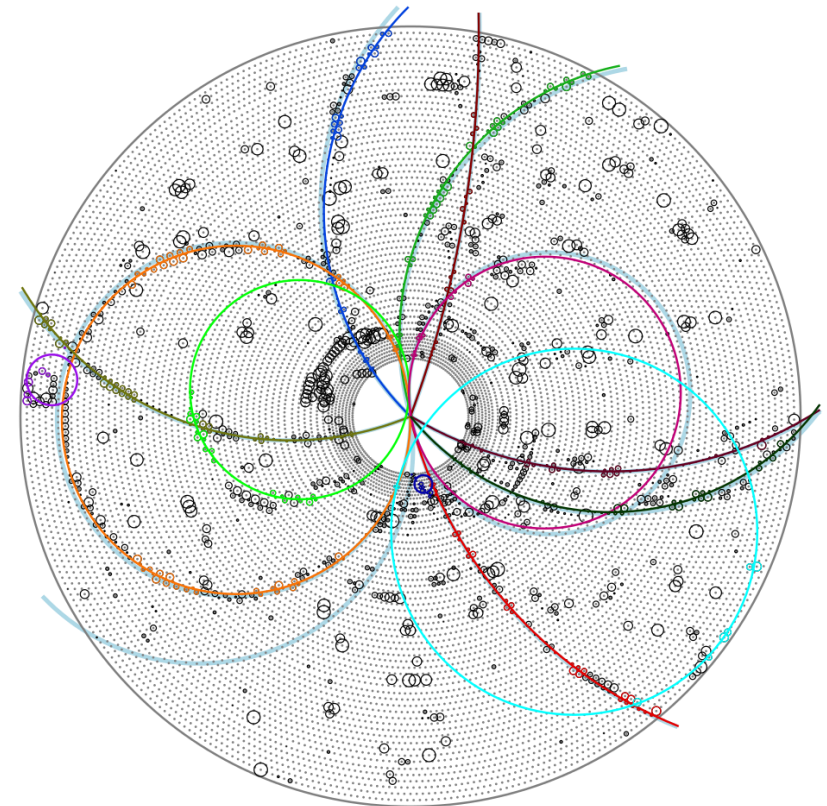
# Track merging

- As it mentioned most of hits are assigned to tracks but:
  - not always to correct one
  - or one real track splitted into few tracklets
- Main goal is to restore full tracks from tracklets
  
- Previously it has been done by tracklet combination and fitting them together
- Current approach:
  - Removing hits while fitting (basing on distance to the fitting curve)
  - It allows to make merging more flexible and reassign hits to correct track
  
- Plan: include in merging procedure information about QuadTree nodes used in track creation
  - Neighboring nodes can contain missing hits
  - Neighbor finder has been developed but still not in usage

# Track merging



■ Before



■ After