

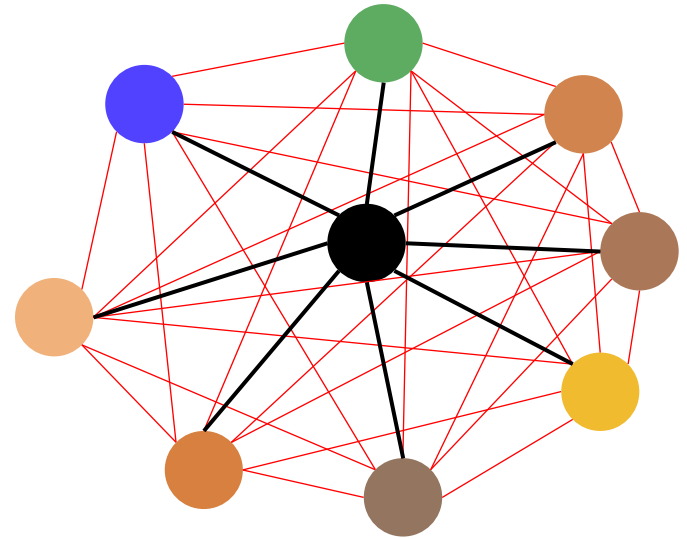
Summary of next steps

Extra truth information

- Context (information about full graph):
 - Number of beam pions, photon, and pi0s in the event
- PFO information:
 - Whether the particle is related to the beam
 - True particle identification
- Neighbour information:
 - PFOs originate from the same mother pi0
- Beam information
 - Whether particles are related to the beam (and level of relation, i.e. daughter vs. grand-daughter)

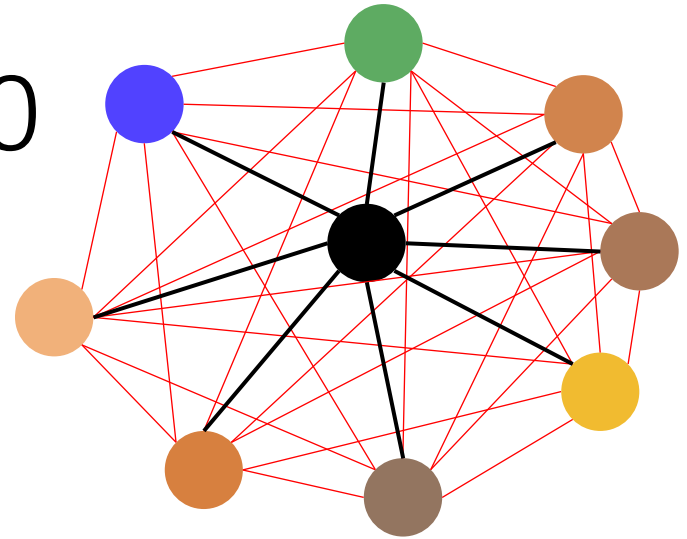
Network structure

- Message passing step:
 1. PFO update
 2. Neighbour momentum update
 3. Neighbour kinematic update
 4. Beam collection
- 1. Set initial state
- 2. Beam collection
- 3. Message passing ($\times N$)
- 4. Readout beam state
- 5. Add additional classification layers



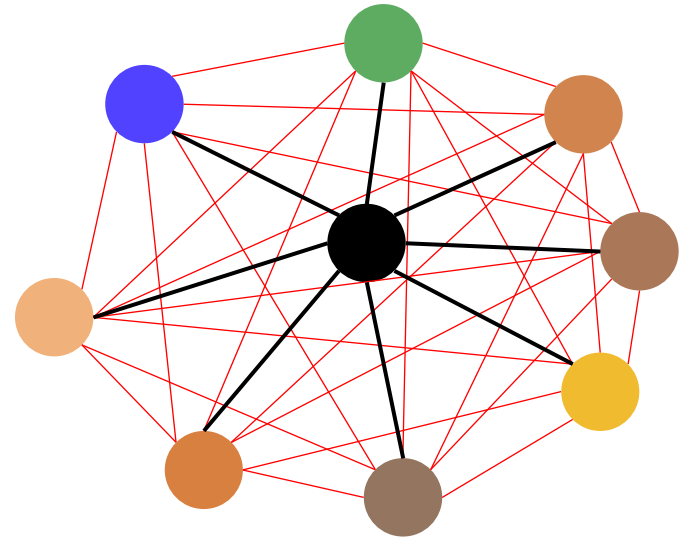
MC structure with π^0

- Message passing step:
 1. PFO update
 2. Neighbour momentum update
 3. Neighbour kinematic update
 4. Beam collection
- 1. Set initial state
- 2. Beam collection
- 3. Message passing ($\times N$)
- 4. Readout beam state
- Layer to predict number of π^0/π^+
- 5. Add additional classification layers



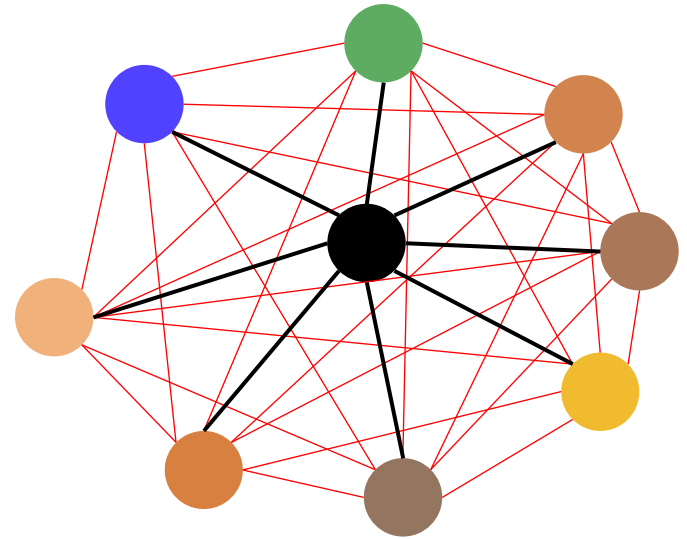
MC structure no pi0

- Message passing step:
 1. PFO update
 2. Neighbour momentum update
 3. Neighbour kinematic update
 4. Beam collection
- 1. Set initial state
- 2. Beam collection
- 3. Message passing (x N)
- Layer to check pi0 reconstruction from neighbours
- 4. Readout beam state
- Layer to predict number of pi0/pi+
- 5. Add additional classification layers



BT structure

- Message passing step:
 1. PFO update
 2. Neighbour momentum update
 3. Neighbour kinematic update
 4. Beam collection
- 1. Set initial state
- 2. Beam collection
- 3. Message passing ($\times N$)
 - Layer to check π^0 reconstruction from neighbours
- 4. Readout beam state
 - Layer to predict number of π^0/π^+
- 5. Add additional classification layers



Data structure

- Message passing step:
 1. PFO update
 2. Neighbour momentum update
 3. Neighbour kinematic update
 4. Beam collection
- 1. Set initial state
- Layer to check PFO classification
 2. Beam collection
 3. Message passing ($\times N$)
- Layer to check π^0 reconstruction from neighbours
- Layer to check beam relations
- 4. Readout beam state
- Layer to predict number of π^0/π^+
- 5. Add additional classification layers

