Embedding Tracks to TrkrClusterv4 in TrkrHitTruthClusters on the NodeTree Pull request 1619

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TrkrClusterv4 information: offline/packages/trackbase/TrkrClusterv4.h

- Data in TrkrClusterv4.h

```
  float m_local[2];          //< 2D local position [cm] 2 * 32
64bit  - cumul 1*64
  TrkrDefs::subsurfkey m_subsurfkey; //< unique identifier for
hitsetkey-surface maps 16 bit
  unsigned short int m_adc;           //< cluster sum adc 16
  char m_phisize; // 8bit
  char m_zsize;   // 8bit
  char m_overlap; // 8bit
  char m_edge;    // 8bit - cumul 2*64
```

- Filled from sum of

- simulation/g4simulation/g4tpc/PHG4TpcElectronDrift.cc
  - Generates electrons per track mapped to TPC through simulation/g4simulation/g4tpc/PHG4TpcPadPlaneReadout.cc
  - Added a structure to carry the output: MapToPadPlanePassData
  - Following data passed:

```
int    neff_electrons ;
double phi_integral   ;
double time_integral  ;
int    phi_bin_lo     ;
int    phi_bin_hi     ;
int    time_bin_lo    ;
int    time_bin_hi    ;
```

  - Multiple sets possible per pad row in TPC

How TrkrClusterv4 data is filled:

- Data in TrkrClusterv4.h

```
float m_local[2] :
• m_local[0] = neff_electrons weighted phi_average
• m_local[1] = neff_electrons weighted time_average

TrkrDefs::subsurfkey m_subsurfkey: not filled

unsigned short int m_adc = sum of neff_electrons
char m_phisize = max(phi_bin_hi) – min(phi_bin_lo)
char m_zsize   = max(time_bin_hi) – min(time_bin_lo)
char m_overlap : not set
char m_edge : not set
```

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TrkrHitTruthClusters storage

```
  //! typedefs for convenience
  using Key           = std::pair<short,short>;
  using Entry         = std::pair<Key, TrkrCluster*>;


  using Vector        = std::vector<Entry>;


  using ConstIterator = Vector::const_iterator;
  using ConstRange    = std::pair<ConstIterator,ConstIterator>;


  using Iterator      = Vector::iterator; // not inplemented with an accessor
  using Range         = std::pair<Iterator,Iterator>; // not implemented with an accessor


  void Reset() override {};


  virtual std::vector<short> getTrkIds   (short layer=-1) const =0; // default to values for all layers
  virtual std::vector<short> getLayerIds (short trkid=-1) const =0; // default to values for all tracks
  virtual bool        hasTrkId           (short trkid)              const =0;
  virtual bool        hasTrkIdLayerId    (short trkid, short layer) const =0;
  virtual bool        hasLayerId         (short layer=-1)           const =0;
  virtual ConstRange  getClusters        (short trackid=-1)         const =0; // will only iterate over range of
trackid (if provided)
  virtual void        addTruthCluster    (short trkid, MapToPadPlanePassData& hit_data) =0;
```