ACD variables in Merit Tuple

Types of variables

Acd*Count*, Acd*No* Number of hits of a particular type

Acd*ActiveDist3D, Acd*AcdDist "Active Distances", signed measure of track extrapolation to hit Acd dectector element
> 0 means that track extrapolates into hit element, < 0 means that track extrapolates outside hit element.

Acd*ArcLen "Arc Length", distance along track where active distances value is calculated. This is also a signed value,
> 0 means along upward going branch of track, < 0 means along downward going branch of track. (or at least below the head of the track).

Acd*Err "Error", proejected error on track extrapolation. This variable is not being filled correctly yet.

Acd*_Down: Down going version of variables, calculated for downward branches of tracks.

AcdTkr1*: Variables calculated only for best track
AcdVertex*: Variables calculated for event vertex

Acd*Ribbon*: Variables calculated with respect to ribbons. Most of the variables are with respect to the tiles only.

Acd*Energy*: Energy deposited in a tile or ribbon, expressed in MeV, calculated using MIP equivalent. For tiles we report the greater of the two pmt values. For ribbons we report both values seperately.

Acd*RibbonLen*: Length along ribbon where value is reported. 0 is center of ribbon, > 0 means towards +x or +y side, < 0 means towards -x or -y side.

Variables in ***BOLD ITALCIS*** are being used in the background rejection analysis

Number of hits

AcdRibbonCount
AcdTileCount

Both stored as floats, would be nicer if they were stored as ints, but that might break some peoples marcros. We will certainly keep these in any case.

Summed Energy observed in the ACD, there are only being filled after AnalysisNtuple v2r23p5

AcdTotalEnergy
AcdRibbonEnergy

Seems like this should maybe by AcdTileEnergy instead, but that also might break existing macros. We will keep these in any case.

Distance variables made by looping over all tracks and all tils w/ signals

AcdActiveDist3D
AcdActiveDist3DArcLen
AcdActivdDist3DErr // Not being filled correctly yet

Downward-going versions of the above

AcdActiveDist3D_Down
AcdActiveDist3DErr_Down // Not in merit, probably not needed
AcdActiveDist3DArcLen_Down // Not in merit, probably not needed

Distances variables made by looping over all tracks and all ribbons w/ signals

AcdRibbonActDist
AcdRibbonActDistErr // Not in merit
AcdRibbonActDistArcLen // Not in merit
AcdRibbonActDistRibbonLen

Potential we could have downgoing versions of these variables, but that probably isn't too important

Distance variables made with respect to the event vertex and all tiles w/ signals

AcdVtxActiveDist
AcdVtxActiveDistErr // Not in merit
AcdVtxActiveDistArcLen
AcdVtxActiveDist_Down
AcdVtxActiveDistErr_Down // Not in merit
AcdVtxActiveDistArcLen_Down // Not in merit

Note that there is nothing in here about extrapolating vertecies to ribbons

Distance variables made from the best track only and all tiles w/ signals

AcdTrk1ActiveDist
AcdTkr1ActiveDistErr
AcdTkr1ActiveDistArcLen
AcdTrk1ActiveDist_Down
AcdTrk1ActiveDistErr_Down // Not in merit
AcdTkr1ActiveDistArclen_Down // Not in merit

Distance variables made by looping over all tracks w.r.t. potential gaps in the ACD

AcdCornerDoca
AcdTkrRibbonDist
AcdTkrHoleDist
AcdTkrRibbonDistRibbonLen Not in merit yet, but requested by A. Moiseev.

// Also, Tkr1 and _Down versions of the same.

Variables relating to the amount of energy observed in tiles used for activeDist calc.

AcdActDistTileEnergy
AcdActDistTileEnergy_Down
AcdTkr1ActDistTileEnergy
AcdTkr1ActDistTileEnergy_Down
AcdVtxActDistTileEnergy
AcdVtxActDistTileEnergy_Down

AcdActDistRibbonEnergy_pmtA,B Not in merit yet, but requested by A. Moiseev.

Variables that have been removed from Merit

AcdGammaDoca (replaced by AcdVtxActDist, which is an active distance calc instead of a doca)
AcdActDist3DTop AcdActDistSideRow0-3 and downward going versions of same
AcdNoTop, AcdNoSideRow0-3
AcdTkrHitsCountTop AcdTkrHitsCountR0-3

Dividing the ACD into top and sides