H1-France pre-selection

- HV requirements : LAR, Spacal, Lumi, Tof (not CJC)
- Background finders : 0-8 bits of QBGFMAR (Ibg), if no LAr electron present
- $Zvertex > -50$ cm

Electron Selection :

- At least one electron (calo only) $P_T^e > 8$ GeV
- Multielectrons : at least 2 electrons with LAr and spacal energy cuts $E_{LAr}^e > 5$ GeV and $E_{Spacal}^e > 8$ GeV
- Instantons high Q^2 : at least one electron $P_T^e > 5$ GeV and ($Q_e^2 > 90$ GeV^2 or $Q_h^2 > 90$ GeV^2)

Jets Selection :

- At least 2 jets with : $P_T^{jet} > 12$ GeV and at least one of those with $\theta^{jet} < 150°$
- jets are calibrated using 2000 constantes

P_T^{miss} **Selection :**

- $P_T^{miss}(clustersonly) > 12$ GeV in one of the calo's (LAr, Spacal and Iron) or in LAr+Spacal or in LAr+Spacal+Iron (defined as P_T^{calo})
- OR $P_T^{CaloComb} > 12$ GeV (hfs from combined objets, all 3 calo.).
- OR $P_T^{hfscalibrated} > 12$ GeV (full HAROO2 hfs calibrated, using jet calibration constantes from 2000)

Tracks Selection :

- At least 1 track with $P_T^{track} > 8$ GeV
- OR $P_T^{calo} > 10$ GeV and 1 track $P_T^{track} > 3$ GeV
- OR $P_T^{calo} > 10$ GeV and $PtrHadTrackPt > 5$ GeV (HAT variable : 4-vector sum of all selected (LW) tracks, **without isolated leptons !?**).

Di-muons Selection :

- at least one identified muon with $P_T^{\mu} > 2$ (the muon should be of grade ¡ 5) and 1 track $P_T^{track} > 2$ GeV
- Ibg bits 5,6 and 7 are not used here (too high inefficiency on muon pairs)

1 Orsay NC/CC preselection and re-preselction

Re-preselection of high Q^2 events for inclusive NC/CC measurements.

1.1 Fast cuts selection (HAT variables)

- a vertex exist
- $|Zvxt| < 45$ cm.
- The Run Quality is not bad (!=3)

1.2 Background rejection

The background rejection is applied only in events in which there is no electron or if there is an electron and $30 < E-Pz$ or $E-Pz > 80$ or $Ptmiss/\sqrt{p_T^e} > 3.5$ e.g. if the event is not balanced longitudinally or transversely. The default background bits check are all the Ibg bits, Ibgfm except bits 5,6,8 and Ibgam except bits 3,4,7,8 (all bits kept have a physics inefficiency below 0.5% for CC selection).

The $E - pz$ and $Ptmiss$ are computed at the μODs level using the all the particle candidates and the calibrated hadronic system using the OM absolute jet calibration.

1.3 NC/CC Selection

Is there is an electron in the event, it is defined as being a "good electron " if

- $|\varphi_e - \varphi_{HFS}| > 160^o$, the electron is back to back with the hadronic system.
- The distance in η, ϕ between the electron and every jet have to be greater than 1. (the electron is not in a jet)

1.3.1 NC selection

If there is an electron with

- $E_e > 10$ GeV
- $5^o \leq \theta_e \leq 150^o$ and identified as a LAr electron

the event is selected as a preselected NC event (note that a "good electron" is not required).
If there is a "good electron" but the event is not a preselected NC, this event is discarded (so it cannot be a preselected CC event).

1.3.2 CC selection

If :

- $\max(Ptmiss^{\mu ODS}, Ptcalo^{HAT}) > 10$ GeV
- $Vap/Vp < 0.35$ (from HAT) or $Etag33 > 2$ GeV

then the event is is a preselected CC event.

Other cuts such as the HV, etc. are applied at the analysis level. For preselection instead of re-preselection the E_e cut lowered $10 \rightarrow 8$ GeV and the $E - pz$ cuts in the background rejection criteria are moved to 25 and 200 GeV.