Hola Diego y Oscar,

He leído y entendido (creo) tus apuntes. La siguiente discusión (inspirada en tus notas) valdría la pena, quizá despues de elaborarla un poco más, incluirla en el texto. Por ello la escribo en inglés:

In addition to the decay chain in (23) there are others which involve neutral scalars and lead to either *dilepton + missing energy* ($\ell^{\pm}_{\alpha}\ell^{\mp}_{\beta}\nu_{\alpha'}\nu_{\beta'}N_1$) or *missing energy* ($\nu_{\alpha}\nu_{\beta}\nu_{\alpha'}\nu_{\beta'}N_1$) signals. The identification of the right-handed neutrinos following these decay chains might be rather hard. Which in turn implies –if this can not be achieved– a suppression of the decay branching ratios $Br(\eta^{\pm} \to \ell^{\pm}_i N_3)$. However, as long as $m_{R,I}$ and m_{η} become of the same order –which is actually our case– the suppression is not strong. Accordingly, the relevant branching ratios are expected to be sizable.

Regarding the decay chain in (24) another one –mediated by the neutral scalar– exist. In this case the signal will be *missing energy* ($\nu_{\alpha}\nu_{\beta}N_1$). However, these processes are not expected, as already discussed in the previuos case, to completely suppress the charged lepton signals. Note that the *dilepton + missing energy* signal coming from $\ell^{\pm}_{\alpha}\ell^{\mp}_{\beta}\nu_{\alpha'}\nu_{\beta'}N_1$ turn out to be background for the decay chain in (24). Since these events could be distinguished, in principle, by looking to their dilepton invariant mass distributions this background can be removed efficiently.