and from the Tevatron[8] (from the DØ analysis of Ref. [4] using 5.4 fb^{-1} and the CDF analysis of Ref. [5] using 4.6 fb^{-1} of data, respectively for electrons and muons in the final state). The Tevatron limits for the Z'_{B-L} boson are shown in table II (for selected masses and couplings). In the same figure we also include for comparison the Tevatron discovery potential at the

$p\overline{p} \to e^+e^-$		$p\overline{p} \to \mu^+\mu^-$	
g'_1	$M_{Z'}$ (GeV)	g'_1	$M_{Z'}$ (GeV)
0.0197	300	0.0179	300
0.0193	400	0.0189	400
0.0281	500	0.0456	500
0.0351	600	0.0380	600
0.0587	700	0.0544	700
0.0880	800	0.0830	800
0.1350	900	0.1360	900
0.2411	1000	0.2220	1000
0.3880	1100	0.3380	1100

TABLE II: *Lower bounds on the Z' boson mass for selected g'_1 values in the $B-L$ model, at 95% C.L., by comparing the collected data of Refs. [4, 5] with our theoretical prediction for $p\overline{p} \to Z'_{B-L} \to e^+e^-(\mu^+\mu^-)$ at the Tevatron.*

integrated luminosities used for the latest published analyses [4, 5] (5.4 fb^{-1} and 4.6 fb^{-1} for electrons and muons, respectively) as well as the expected reaches at $\mathcal{L} = 10\,\text{fb}^{-1}$.

Notice that the Tevatron excluded area are based on the actual data, while the dot-dashed 2σ curves are our theoretical curves. Thus, if from the one side theory cannot reproduce experiments, from the other side we are comparing two methods of extracting the results. As mentioned previously, figure 3 shows that the procedures used in experimental analyses for the electron channel [4, 6] are not quite optimised for maximizing the signal significance. The alternative analysis described in this work has the potential to improve sensitivities and can be easily developed even further.

[8] Notice that these are the most conservative limits, as they are evaluated for decoupled heavy neutrinos, i.e., with masses bigger than $M_{Z'}/2$.