

Studies of $e^+e^- \rightarrow b\bar{b}$ channel at the International Linear Collider

Final word on LEP A_{FB}^b anomaly

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Abstract

This poster presents studies for the International Linear Collider (ILC), a linear electron-positron collider with a nominal center-of-mass energy from 250 GeV to 500 GeV.

The results of the detector study allow for an estimation of the ILC precision on the b-quark electroweak couplings and form factors. The ILC will be able to resolve the LEP anomaly in the $b\bar{b}$ production process. The ILC precision on the right-handed $Z^0 b\bar{b}$ coupling, a prime candidate for effects of new physics, is calculated to be at least 5 times better than the LEP experiments.

Introduction

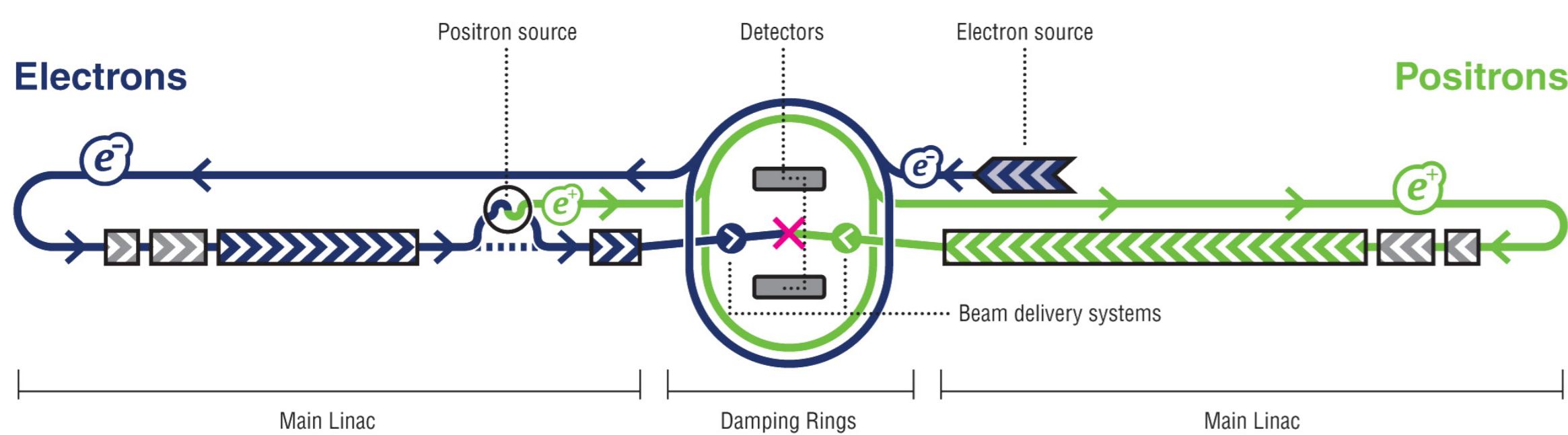


Figure 1: Schematic view of the ILC accelerator complex.

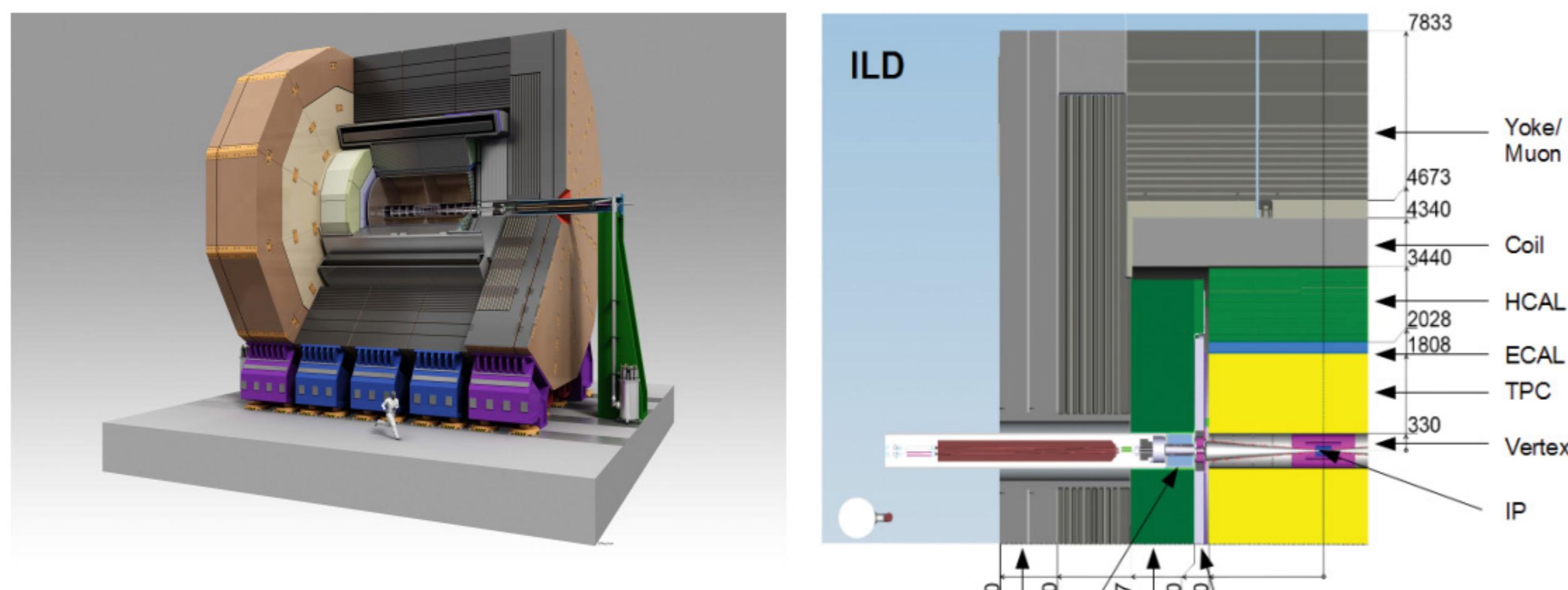


Figure 2: Schematic view of the ILD concept.

Main Objectives

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Results

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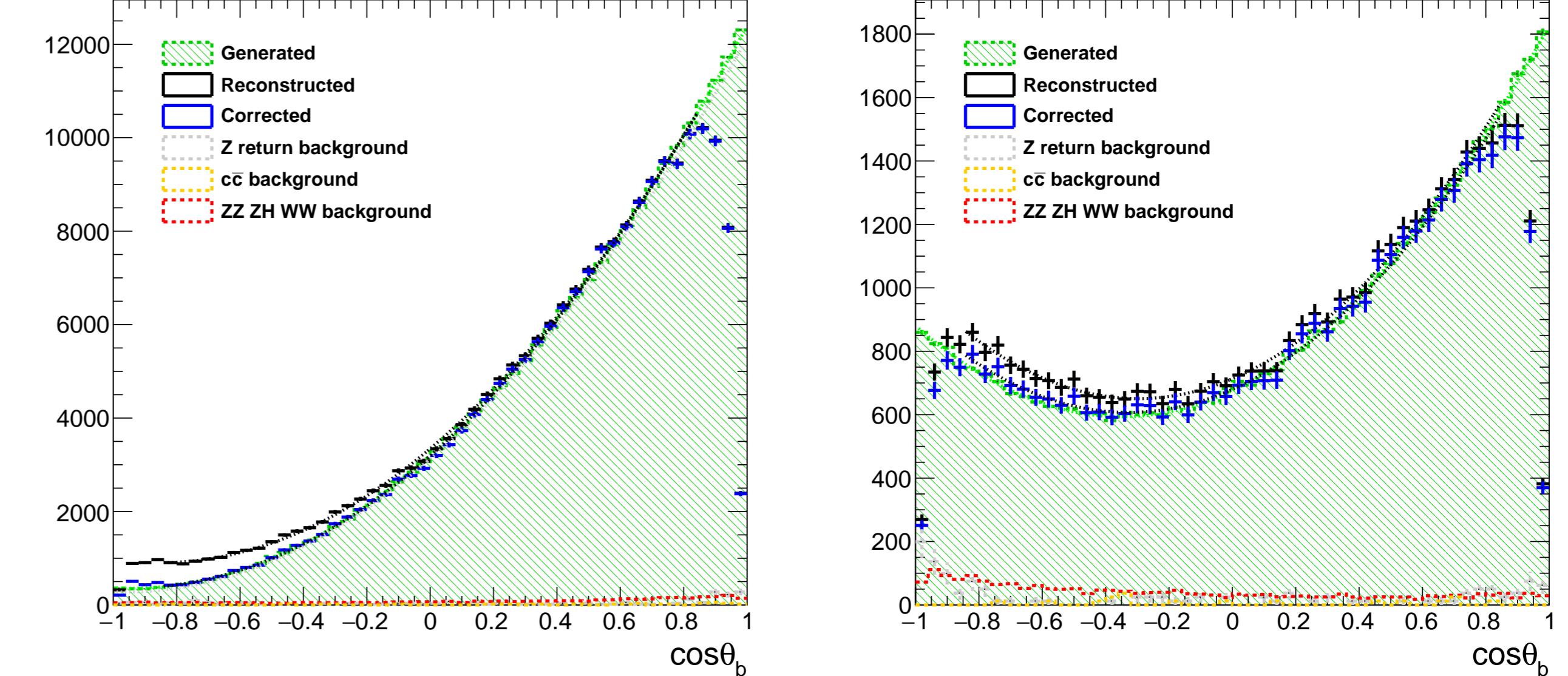


Figure 3: Generated b-quark polar angle distribution compared to the final reconstructed b-quarks polar angle in left-handed case (a) and right-handed case (b) with overlaid background processes.

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Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table 1: Table caption

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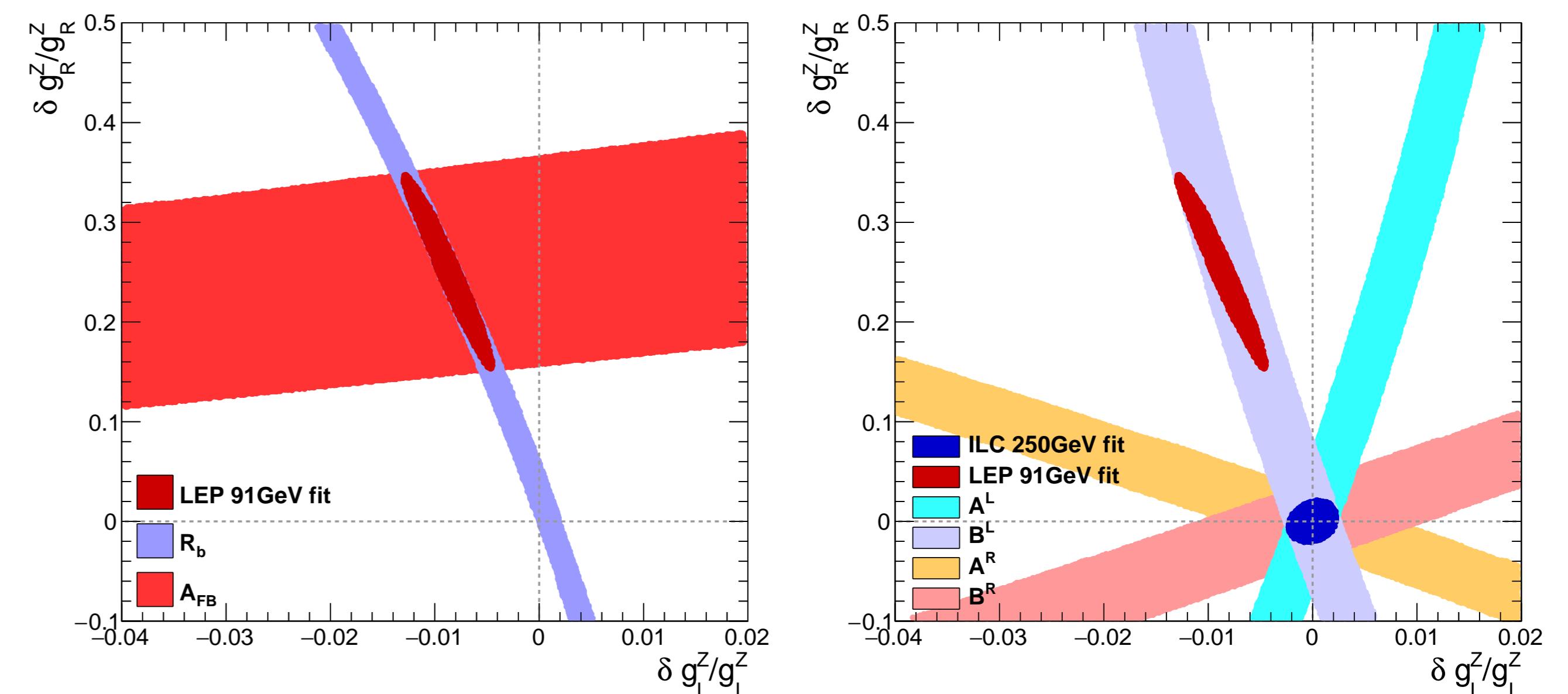


Figure 4: Tree level $\pm 1\sigma$ allowed regions defined by the forward-backward asymmetry and total cross section measurements at LEP (a) and ILC via the differential cross section fit (b). Dashed guidelines show the Standard Model value. The allowed region expected at the ILC is centered at Standard Model values of couplings.

Conclusions

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Forthcoming Research

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References

- [1] A. B. Jones and J. M. Smith. Article Title. *Journal title*, 13(52):123–456, March 2013.
- [2] J. M. Smith and A. B. Jones. *Book Title*. Publisher, 7th edition, 2012.

Acknowledgements

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