Measurement of the Left-Right Asymmetry in Z0 Events at SLAC

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Abstract

Measurements of the Left-Right Asymmetry
in $Z^0$ events at SLAC

by Anthony Frank Szumilo

Chairman of the Supervisory Committee: Professor Thompson H. Burnett
Department of Physics

Recent results from the 1992 and 1993 left-right asymmetry cross section measurements at the Stanford Linear Accelerator Center are presented. Measurements made with SLAC running with a center-of-mass energy at the $Z^0$-pole (91.2 GeV) by the SLD detector and an average electron beam polarization of 22.4 ± 0.7% for 1992 and 62.6 ± 1.2% for 1993. The asymmetry measured was $A_{LR} = 0.100 ± 0.044$ and $A_{LR} = 0.1656 ± 0.0073$ for the 1992 and 1993 runs, respectively. This in turn allows us to calculate the weak mixing angle value of $\sin^2 \theta_w = 0.2378 ± 0.0056$ and $\sin^2 \theta_w = 0.2288 ± 0.0009$ for the two data sets.
TABLE OF CONTENTS

1. INTRODUCTION
   1.1 Theory ................................................................. 1
   1.2 $e^+e^- \rightarrow f^+f^-$ Generalized cross section and final state selection ............ 2
      1.2.1 Asymmetries in the Standard Model ........................................ 3
   1.3 Experimental Considerations ......................................................... 11
      1.3.1 Sensitivity to $\sin^2\theta_W$ and polarization .................. 11
      1.3.2 Radiative and Standard Model corrections .................................. 12

2. THE SLC ........................................................................... 16
   2.1 POLARIZATION .............................................................. 16
      2.1.1 Theory and Practice ..................................................... 18
   2.2 Polarized beam storage and transport ............................................ 21
      2.2.1 Polarization at SLAC .................................................. 21
      2.2.2 Polarimetry .......................................................... 22
   2.3 Storage Rings & Spin Rotators .................................................. 36
   2.4 Positron Production Target ....................................................... 37
      2.4.1 Hardware design ...................................................... 40
      2.4.2 Hardware ............................................................. 45
      2.4.3 CAMAC layout ....................................................... 50
      2.4.4 Controller (software) logic ........................................... 56
   2.5 Linac and Arcs ................................................................. 57

3. SLD .................................................................................. 59
   3.1 Detector Overview and Description ................................................. 59
      3.1.1 Vertex Detector ........................................................ 61
      3.1.2 Drift Chambers ......................................................... 61
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>figure 1-1 Typical s-channel and t-channel events at the Z-pole resonance</td>
<td>1</td>
</tr>
<tr>
<td>figure 1-2 s-channel scattering case with photon mediating</td>
<td>4</td>
</tr>
<tr>
<td>figure 1-3 Higher order loop interference terms for the Z</td>
<td>10</td>
</tr>
<tr>
<td>figure 1-4 The effect of the top quark and Higgs boson masses on $\Lambda_{1R}$</td>
<td>14</td>
</tr>
<tr>
<td>figure 2-1 Layout of the SLAC linac</td>
<td>17</td>
</tr>
<tr>
<td>figure 2-2 Selection rule in the transition of conduction band electrons</td>
<td>18</td>
</tr>
<tr>
<td>figure 2-3 Polarization of ejected electrons in GaAs vs. laser wavelength</td>
<td>20</td>
</tr>
<tr>
<td>Figure 2-4 Energy Band structure of (a) GaAs and (b) Strained GaAs</td>
<td>21</td>
</tr>
<tr>
<td>figure 2-5a Feynmann diagram for polarized e-e scattering</td>
<td>25</td>
</tr>
<tr>
<td>figure 2-6 Layout of the Moller polarimeter</td>
<td>28</td>
</tr>
<tr>
<td>figure 2-7 Compton magnet and laser layout</td>
<td>31</td>
</tr>
<tr>
<td>figure 2-8 Polarimeter overview</td>
<td>32</td>
</tr>
<tr>
<td>figure 2-9 LBL Compton CRIDs, profile and phototubes</td>
<td>34</td>
</tr>
<tr>
<td>figure 2-10 Compton channel asymmetry vs. beam deflection</td>
<td>35</td>
</tr>
<tr>
<td>figure 2-11 Storage ring layout with flip magnets</td>
<td>38</td>
</tr>
<tr>
<td>figure 2-12 HPPT trolling motor setup</td>
<td>41</td>
</tr>
<tr>
<td>figure 2-13 HPPT ferrite pick-up and electronics logic</td>
<td>49</td>
</tr>
<tr>
<td>figure 2-14 HPPT-CAMAC module and layout</td>
<td>52</td>
</tr>
<tr>
<td>figure 2-15 HPPT software logic flowchart</td>
<td>54</td>
</tr>
<tr>
<td>figure 3-1 SLD profile</td>
<td>60</td>
</tr>
<tr>
<td>figure 3-2 The SLD vertex detector</td>
<td>62</td>
</tr>
<tr>
<td>figure 3-3 Drift Chamber wire cell layout</td>
<td>65</td>
</tr>
<tr>
<td>figure 3-4 Equipotential contours of a DC cell</td>
<td>66</td>
</tr>
<tr>
<td>figure 3-5 Luminosity Monitor profile</td>
<td>74</td>
</tr>
<tr>
<td>figure 4-1 Feynman diagrams for $e^+e^- \rightarrow 2\gamma$</td>
<td>83</td>
</tr>
</tbody>
</table>
figure 4-2 Comparison of SLAC and LEP results ................................................. 91
figure A-1 Generalized layout of the CETI/BUILD system ................................. 101
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