

A Study of $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0 \pi^0$ at 3.090 GeV Center of Mass Energy*

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A STUDY OF $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$ AT 3.090 GeV CENTER OF MASS ENERGY

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University of Illinois at Urbana-Champaign, 1993

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The process $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$ is studied at a center of mass energy of 3.090 GeV, the J/ψ center of mass energy, by the **Mark III** detector at SPEAR. The branching ratios for $\psi \rightarrow \pi^+\pi^-\pi^0\pi^0$ and several background processes are measured: $\psi \rightarrow \pi^+\pi^-\pi^0\pi^0\pi^0$, $\psi \rightarrow K^\pm K^\mp \pi^0\pi^0$, and $\psi \rightarrow K^\pm \pi^\mp \pi^0\pi^0$. Upper limits on $e^+e^- \rightarrow \rho^+\rho^-$ are derived. Evidence is presented that the isobar model of low-energy hadronic interactions may not apply to $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$. Suggestions for further research are made.

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Contents

Chapter 1 Introduction	1
1.1 Form Factors	6
1.2 QCD Predictions for Form Factors	11
1.2.1 Brodsky and LePage Argument	17
1.2.2 Predictions Based on LePage and Brodsky	19
1.2.3 Chernyak and Zhitnitsky Calculations	19
1.3 Low-Energy Strong Interaction Phenomenology	22
1.3.1 Resonances	23
1.3.2 The S Matrix	26
1.3.3 Partial Wave Analysis	27
1.3.4 The Isobar Model	28
1.3.5 Empirical Evidence for Isobar Model	32
1.3.6 The a_1 Resonance	35
1.4 Conclusion	40
Chapter 2 Experimental Apparatus	41
2.1 Accelerator and Storage Ring	41
2.2 The Mark III Detector	43
2.2.1 Beam Pipe and Multiple Scattering	46

2.2.2	Inner Trigger Chamber (Layer 1)	46
2.2.3	Central Drift Chamber	46
2.2.4	Time of Flight System	48
2.2.5	Shower Counters	49
2.2.6	Magnet	50
2.2.7	Muon Detection System	51
2.2.8	Luminosity Monitoring	52
2.2.9	Trigger	52
2.2.10	Data Acquisition	53
2.2.11	MarkIII Run History	54
2.3	Offline Analysis	54
2.3.1	Track Finding and Fitting	58
2.3.2	Kinematic Fitting	60

Chapter 3 Event Selection, Backgrounds, and Two Prong Branching Ratios

	Branching Ratios	65
3.1	Introduction	65
3.2	The Event Selection	66
3.2.1	Event Selection Criteria	68
3.2.2	General Properties of $e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$ Data	76
3.2.3	Efficiency Estimation	86
3.2.4	Systematic Errors on $\pi^+\pi^-\pi^0\pi^0$ Branching Ratio	90
3.2.5	Alternative Shower Counter Cuts	91
3.3	Background Processes	93
3.3.1	Fake Pion Backgrounds	93
3.3.2	$e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$	94

3.3.3	Systematic Errors on $\psi \rightarrow \pi^+\pi^-\pi^0\pi^0\pi^0$ Branching Ratio	97
3.3.4	$\psi \rightarrow \gamma\eta_c$	97
3.3.5	$\psi \rightarrow \gamma\rho\rho$	99
3.3.6	The $\psi \rightarrow K^\pm K^\mp \pi^0 \pi^0$ Background Process	99
3.3.7	Systematic Errors on the $K^\pm K^\mp \pi^0 \pi^0$ Branching Ratio	102
3.3.8	$\psi \rightarrow K^\pm \pi^\mp \pi^0 \pi^0$	103
3.3.9	Systematic Errors on $K^\pm \pi^\mp \pi^0 \pi^0$ Branching Ratios	106
3.3.10	Contribution of $K^\pm \pi^\mp \pi^0 \pi^0$ to $\pi^+\pi^-\pi^0\pi^0$ Events	108
3.4	Conclusion	109
Chapter 4	The Physics Models	111
4.1	Four Pion Phase Space	112
4.2	The Lund Model	113
4.3	Channel Likelihood Models	115
4.3.1	Introduction	115
4.3.2	A Simple Channel Likelihood Model	117
4.4	Fully Interfering Models	119
4.5	Extended Likelihood	121
4.6	Lorentz Invariant Amplitude Formalism	123
4.6.1	Mass Dependent Widths	129
4.6.2	Very Simple Case $S \rightarrow SS$	130
4.6.3	Simple Case $V \rightarrow PP$	130
4.6.4	$e^+e^- \rightarrow \gamma^* \rightarrow \pi^+\pi^-$	130
4.6.5	$e^+e^- \rightarrow \rho\pi$	131
4.7	Rho Rho Mode	132
4.7.1	Incorporating Rho Decay in Amplitudes	134

4.7.2	Simplification of $\rho^+\rho^-$ Amplitudes	135
4.8	$a_1\pi$ Mode	137
4.9	Rho Pi Pi Modes	139
4.10	Omega Pi Mode	140
4.11	Summary of Chapter	143
Chapter 5 Fit Results and Discussion		144
5.1	Introduction	144
5.2	Phase Space	144
5.2.1	Comparison of Data and Phase Space	145
5.2.2	Mass Distributions	146
5.2.3	Cosine of Angle Between Decay Planes	150
5.2.4	Cosine of DiPion Angle	153
5.2.5	Cosine of Pion Angle with DiPion Boost	156
5.2.6	Comparison of Phase Space and Phase Space	159
5.2.7	Mass Distributions	159
5.2.8	Cosine of Angle Between Decay Planes	163
5.2.9	Cosine of DiPion Angle	166
5.2.10	Cosine of Pion Angle with DiPion Boost	169
5.3	Lund JETSET 6.3 Monte Carlo	172
5.3.1	Comparison of Lund and Data	173
5.3.2	Cosine of Angle Between Decay Planes	176
5.3.3	Cosine of DiPion Angle	179
5.3.4	Cosine of Pion Angle with DiPion Boost	182
5.3.5	Comparison of Lund to Lund	185
5.3.6	Mass Distributions	185

5.3.7	Cosine of Angle Between Decay Planes	189
5.3.8	Cosine of DiPion Angle	192
5.3.9	Cosine of Pion Angle with DiPion Boost	194
5.3.10	Physics in Lund	197
5.4	Simple Channel Likelihood Models	198
5.4.1	Simple Rho Model	199
5.4.2	Verification of the Fit Procedure for Simple Rho Model	203
5.4.3	Simple a_1 Model	211
5.4.4	Verification of Fit Procedure for Simple a_1 Model	216
5.5	Simple Fully Interfering Lorentz Invariant Amplitude Model	223
5.6	Conclusions	229
5.6.1	Possible Explanations for Fitting Difficulty	229
5.6.2	Suggestions for Future Analysis	230
Chapter 6 Upper Limit on Rho Form Factors		232
6.1	Introduction	232
6.2	The $\rho^+\rho^-$ Models	233
6.2.1	Introduction	233
6.2.2	Comparison of Data and $\rho^+\rho^-$ Models	233
6.2.3	High Mass Bump In $\rho^+\rho^-$ Distributions	243
6.3	$e^+e^- \rightarrow \pi^+\pi^-\pi^0\pi^0$ Phase Space	246
6.4	$\rho\pi\pi$ Model	246
6.5	Lund Model	250
6.6	Naive Upper Limit	253
6.7	Upper limits with Interference	258
6.7.1	Determining an Upper Limit With Interference	258

6.7.2 Upper Limits Summary	262
Chapter 7. Conclusion	264
7.1 Definite Results	264
7.2 Speculations	265
7.3 Suggestions for Future Research	266
Appendix A	269
Appendix B	276
References	295
Vita	306