

Direct measurement of the  $\bar{K}N \rightarrow \pi\Sigma$  scattering  
amplitude below the  $\bar{K}N$  threshold employing the  
 $d(K^-, N)''\pi\Sigma''$  reaction

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# Chapter 1

## Introduction

**1.1**  $\Lambda(1405)$  and  $\bar{K}N$  interaction

**1.2**  $d(K^-, n)$  reaction

**1.3** The J-PARC E31 experiment

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# Experimental setup

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#### 4.1.1 Backward $\pi^\mp\Sigma^\pm$ event selection

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### $\pi^0\Sigma^0$ spectrum analysis



## Appendix B

# Detector resolution

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### $d(K^-, n)K^0n$ analysis

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