E246 J. Imazato

Search for T violation in the $K^+ \rightarrow \pi^0 \mu^+ \nu$ decay

Submitted	(1991/6/10)
Approved	1991/7/16
Beam line	K5
Shift requested	450 +200 extension
Shift executed	446 +142 extension
Executed cycles	(94[7,8,10], 95[4,5,6,7,8]), 95[11], 96[1,2-1,2-3,3,4],
	97[1,3-1,3-2,4-1,4-2], 98[2,3,4], 99[3-1,3-3], 00[5]

E470 T. Baker / J. Imazato

Measurement of direct photon emission in $K^+ \rightarrow \pi^+ \pi^0 \gamma$

Received	2000/6/23
Approved	2000/7/25
Beam line	K5
Shift requested	80
Shift executed	96.5
Executed cycles	01[3-1,3-2]

Papers and activities

[Legend]

- Physics papers published in refereed journal
- Technical papers
- ★ PhD theses
- ♦ Conference and Symposium
- * Internal Report and others
- M. Abe et al.

Search for T-violating transverse muon polarization in $K^+ \to \pi^0 \mu^+ \nu$ decay using stopped kaons Phys. Rev. Lett. 83 (1999) 4253.

• Y. H. Shin et al.

A kinematically complete measurement of $K^+ \to \pi^+ \pi^0 \pi^0$ decay Eur. Phys. J. C12 (2000) 627.

S. Shimizu et al.

Test of exotic scalar and tensor couplings in $K^+ \to \pi^0 e^+ \gamma$ decay Phys. Lett.. B495 (2000) 33.

• K. Horie et al.

Measurement of $\Gamma(K_{\mu3})/\Gamma(K_{e3})$ ratio using stopped positive kaons Phys. Lett. B513 (2001) 311.

• M. A. Aliev et al.

Measurement of direct photon emission in $K^+ \to \pi^+ \pi^0 \gamma$ decay using stopped kaons Phys. Lett. B554 (2003) 7.

• V. V. Anisimovsky et al.

First measurement of the T-violating muon polarization in the decay $K^+ \to \mu^+ \nu \gamma$ Phys. Lett. B562 (2003) 166.

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A new limit of T-violating transverse muon polarization in the $K^+\to\pi^0\mu^+\nu$ decay Phys. Rev. Let. 93 (2004) 131601-1

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Technical papers.

[★] PhD theses.

[♦] Conference and Symposium.

^{*} Internal Report and others.

• S. Shimizu et al.

Measurement of $K^+ \to \pi^0 \pi^0 \, e^+ v$ decay using stopped positive Kaons Phys. Rev. D70 (2004) 037101-1

• M. Abe et al.

Search for T-violating Transverse Muon Polarization in the $K^+ \to \pi^0 \mu^+ \nu$ Decay Phys. Rev. D73, 072005 (2006)

M. A. Aliev et al.

New result of the measurement of the direct photon emission in $K^+ \to \pi^+ \pi^0 \gamma$ decay Eur. Phys. J. C46 (2006) 61-67

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Measurement of $K^+ \to \pi^0 \mu^+ \nu \gamma$ decay using stopped kaons

Phys. Lett. B633 (2006) 190-194

O D.V. Dementyev et al.,

CsI(Tl) calorimeter with photodiode readout for T-violation in $K_{\mu3}$ decay Nucl. Instr. Method A379 (1996) 499.

O R.L. Wixted et al.

A 32-channel wave form sampling fastbus module with local DSP processing Nucl. Instr. method A386 (1997) 483.

○ A.P. Ivashkin et al.

Scintillating ring hodoscope with WLS fiber readout

Nucl. Instr. Method A394 (1997) 321.

O S. Sekikawa et al.

A Fast DSP based calorimeter hit scanning system

Nucl. Instr. Method A395 (1997) 190.

O T. Ikeda et al.

High-precision magnetic field mapping with a three dimensional Hall probe for a T-violation experiment in $K_{\mu3}$ decay

Nucl. Instr. Mehtod A401 (1997) 243.

O Y. Kudenko et al.,

Design and performance of the readout electronics for the CsI(Tl) detector Nucl. Instr. Method A411 (1998) 437.

O D.V. Dementyev et al.

CsI(Tl) photon detector with PIN photodiode readout for a $K_{\mu3}$ T-violation experiment Nucl. Instr. Method A440 (2000) 151.

O J.A. Macdonald et al.

Apparatus for a search for T-violating Muon polarization in stopped-kaon decays Nucl. Instr. Method A506 (2003) 60.

★ S. Shimizu

Precise Measurement of $K^+ \to \pi^0 e^+ v$ Form Factors using Stopped K^+ Tokyo Institute of Technology, 1997.

★ Y. Igarashi;

Measurement of the form factors in $K^+ \to \pi^0 \mu^+ \nu$ decay

University of Tsukuba, 1997.

★ T. Ikeda

Measurement of Muon In-Plane Polarization in the Decay of $K^+ \to \pi^0 \mu^+ \nu$ University of Tsukuba, 1998.

★ T. Yokoi

Search for T-violating Muon Polarization in $K^+ \to \pi^0 \mu^+ \nu$ decay University of Tokyo, 1998.

★ C. Mindas

Search for T Violation in the $K^+ \to \pi^0 \mu^+ \nu$ decay Princeton University, 1998.

- ★ H.C. Huang
- Physics papers published in refereed journal.
- Technical papers.
- ★ PhD theses.
- ♦ Conference and Symposium.
- * Internal Report and others.

Search for T-violating Muon Polarization in $K^+ \to \gamma \mu^+ \nu$ Decay National Taiwan University, 1998.

★ Y.H. Shin

Kinematically Complete Measurement of $K^+ \to \pi^+ \pi^0 \pi^0$ Decays Yonsei University, 1998.

★ A.P. Ivashkin

Search for T violation in the $K^+ \to \pi^0 \mu^+ \nu$ decay using a CsI(Tl) calorimeter as a neutral pion detector (in Russian)

Institute for Nuclear Research, Russian Academy of Sciences, 1998.

★ T. Baker

Measurement of scattering length using $K\pi 3$ decay

University of Saskatchewan, 1999.

★ O.V. Mineev

Development and design of analogue electronics and trigger system in the experiment to measure T-violating muon polarization in positive kaon decays (in Russian); Institute for Nuclear Research, Russian Academy of Sciences, 2000.

★ K. Horie

Measurement of $\Gamma(K_{\mu 3})/\Box\Gamma(K_{e 3})$ ratio using stopped positive kaons Osaka Univesity, 2002.

★ M. Khabibullin

Measurement of T-violating muon polarization in the decay of positive kaons and limits on the parameters of non-standard models of CP violation (in Russian)

Institute for Nuclear Research, Russian Academy of Sciences, 2003.

★ M. Aliev

Measurement of T-violating muon polarization in the decay of positive kaons and limits on the parameters of non-standard models of CP violation (in Russian)

Institute for Nuclear Research, Russian Academy of Sciences, 2006

J. Imazato

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Proc. 10th Int. Symp. High Energy Spin Physics, Nagoya, November 9-14, 1992.

Y. Kuno

Muon Polarization in K⁺ Decays

Proc. Workshop on Future Directions in Particle and Nuclear Physics at Multi-GeV Hadron Facilities, BNL, March 1993.

Y. Kuno

Search for Time Reversal Violation in K⁺ Decays

Proc. 3rd KEK topical conference on CP violation – Its implications to Particle and Cosmology, KEK, Nov.1993, [Nucl. Phys. B (Proc. Suppl.) 1993].

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Proc. Int. WS Intersection between Particle and Nuclear Physics, Florida, June 1994.

J.A. Macdonald

Search for T-violation in K⁺ Decays

Proc. HYP94, Vancouver, July 1994.

P. Gumplinger

Measuring the Muon Polarization in $K^+ \to \pi^0 \mu^+ \nu$ the E246 Detector at KEK

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♦ Y. Kuno

Search for Time reversal Violation in *K* and *B* Decays

Proc. 1st Int. Symp. Symmetries in Subatomic Physics", Taipei, May 1994 [Canadian Journal of Physics, 32 (1994) 1015].

♦ J. Imazato

T violation Test $K^+ \rightarrow \pi^0 \mu^+ \nu$

[•] Physics papers published in refereed journal.

Technical papers.

[★] PhD theses.

[♦] Conference and Symposium.

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Proc. 23rd INS Int. Symp. Nuclear and Particle Physics with Meson Beams in the 1 GeV Region, Tokyo, March 15-18,1995.

♦ H.M. Shimizu

Search for T-violation in $K^+ \to \pi^0 \mu^+ \nu$

Proc. IV Int. Symp. Weak and Electromagnetic Interactions in Nuclei (WEIN95), Osaka, June 12-16,1995.

Y. Kuno

Search for T-violation in K⁺ Decays

Proc. Int. Con. Exotic Atoms and Nuclei, Hakone, June 7-10, 1995.

P. Depommier

An Experiment to Measure the Transverse muon Polarization in the $K^+\to\pi^0\mu^+\nu$ Decay

Proc. Europhysics Conf. High Energy Physics, Brussel, July 27-Aug.2, 1995.

M. Chapman

Search for T-violation in the $K^+ \to \pi^0 \mu^+ \nu$ Decay

APR96 Meeting of the American Physics Society, May 1996.

Y.G. Kudenko

T-violating muon polarization in the $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the Workshop on K physics, Orsey, May 30-June 4, 1996, p.345

Search for T-violation in the $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the 1996 Workshop on Heavy Quarks at Fixed Target", St.Goar, October 3-6, 1996, p.431

♦ Y. Kuno

Search for T-violation in $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the Third Workshop on Particle Physics Phenomenology, Taipei, November 14-17, 1996, p.144

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High resolution CsI(Tl) calorimeter with PIN photodiode readout

Proceeding of the KEK Workshop on Scintillation Detectors, April 28-30, 1997, p.156

M. Hasinoff

Search for T-violation in $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the International Conference of "Intersections between Particle and Nuclear Physics", Montana, June, 1997

M. Aoki

Search for T-violation in $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the 2nd International Symposium on "Symmetries in Subatomic Physics", Seattle, June 25-28, 1997

♦ M. Hasinoff

Search for T-violation in $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the DNP97 Meeting of the American Physical Society, Whisler, October 5-8, 1997

M. Aoki

Search for T-violation in $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proceedings of the International Workshop on kaon, muon, Neutrino Physics and Future, KEK, October 31- November 1, 1997

♦ M. P. Grigorjev et al.

Data Acquisition and On-line Visualization System in the Experiment E246 at KEK Proceedings of the Workshop on Visualization in High Energy Physics, SLAC, January 20-30, 1998

♦ Y. Kuno et al.

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Proc. of the XXIX International Conference on High Energy Physics, Vancouver, Canada, July 23-29, 1998".

J. Imazato

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[★] PhD theses.

[♦] Conference and Symposium.

^{*} Internal Report and others.

T Violation in $K^+ \rightarrow \pi^0 \mu^+ \nu$ at KEK

Proc. of the Topical Conference of XXVI SLAC Summer Institute on Particle Physics, SLAC, Stanford, U.S.A., Aug. 3-14, 1998.

♦ M. Aoki

T Violation in K⁺ (KEK-PS-E246)

Proc. of the International Workshop on CP Violation in K, Tanashi, Japan, December 18-19, 1998.

M. Blecher et al.

Test of Time Reversal Invariance in the $K^+ \to \pi^0 \mu^+ \nu$ Decay

Proc. of the 15th International Conference on Particles and Nuclei (PANIC'99), Uppsala, Sweden, June 10-16, 1999.

♦ G. Y. Lim

Transverse muon polarization in K⁺_{µ3} decay

Proc. of the Chicago Conference on kaon Physics (KAON99), Chicago, USA, June 21-26, 1999.

♦ A. Ivashkin et al.

New result on measurement of T-violating muon polarization in $K^+_{\mu\beta}$ decay

High Energy Physics 99, ed. K. Huitu et al., Springer-Verlag, 2000, Proc. of the International Europhysics Conference on High Energy Physics, Tampere, Finland, 15-21 July, 1999.

♦ P. Depommier et al.

Search for non-standard time-reversal violation

Nuclear Physics A **654** (1999) 935c [Proc. of the International Nuclear Physics Conference, Paris, France, Aug.24-28, 1999].

C. Rangacharyulu

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17th International Conference on Weak Interactions and Neutrinos (WIN99),

Capetaown, South Africa, January 24-30, 2000.

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International Conference on Quark Nuclear Physics, Adelaide, Australia, Feb.21-25, 2000. [to be published in Nuclear Physics A].

P. Depommier

Search for time-reversal violation in the $K^+ \to \pi^0 \mu^+ \nu$ decay

VIth International Conference on Few-Body Problems in Physics, Taipei, Taiwan, March 6-10, 2000. [to be published in Nuclear Physics A].

New limit on T-violating muon polarization in the decay $K^+ \to \pi^0 \mu^+ \nu$

XXXVth Recontres de Moriond, Electroweak Interaction and Unified Theories, Les Arcs, France, March 11-18, 2000.

Y. Kuno

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3rd International Symposium on Symmetries in Subatomic Physics, Adelaide, Ausrtalia,, March 13-17, 2000.

M. Hasinoff

A Test of Time Reversal Invariance in Stopped K⁺ Decay

7th Conference on Intersections Between Particle and Nuclear Physics, Quebec, Canada, May 22-28, 2000, AIP conference Proceedings, Vol. 549, 969 (2002).

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Search for T-violating Muon Polarization in $K^+ \to \pi^0 \mu^+ \nu$ decay

XXXth International Conference on High Energy Physics, Osaka, Japan, July 27- Aug. 2, 2000.

J. Imazato

Branching ratio measurement of $K^+ \to \pi^0 \mu^+ \nu$ direct emission

Kaon Decay Workshop for Young Physicists, Tsukuba, Japan, February 14-16, 2001.

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Search for T Violation $K^+ \rightarrow \pi^0 \mu^+ \nu$ in at KEK E246

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Physics series (2001, to appear).

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International Europhysics Conference on high Energy Physics, Budapest, Hungary, July 2001.

J. Imazato

Kaon Physics at KEK

Fifth KEK topical conference -Frontier of Flavor Physics-, Tsukuba, Japan, November 19-22, 2001.

Y. Kudenko

Further search for T violation in the deacy \Box K⁺ $\rightarrow \pi^0 \mu^+ \nu$ 16th International Conference on Particles and Nuclei, Osaka, Japan, September 30-October 4, 2002.

♦ K. Horie

Search for T-violating transverse muon polarization in $K^+ \to \pi^0 \mu^+ \nu$ decay using stopped kaons KEK phenomenology workshop, March 1-3, 2004, KEK.

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Result of T-violating Muon Polarization Measurement in the $K^+ \to \pi^0 \mu^+ \nu$ Decay XXXIX Rencontres de Moriond – March 21-28, 2004. (Electroweak Interactions).

♦ C. Rangacharyulu

Search for T-violation in Kμ³ Decays

Physics at Meson Factories (Dafne 2004, oral), Frascati, Italy, June 7-11, 2004

♦ S. Shimizu

New limit on the T-violating transverse muon polarization in $K^+ \to \pi^0 \mu^+ \nu$ ($K\mu^3$) decay Second Joint Meeting of the Nuclear Physics Divisions of APS and JPS Hawaii 2005 (HAW05), Hawaii, September 18-22, 2005

M. Hasinoff

A Test of Time Reversal Invariance in Stopped Kaon Decay PANIC05, Santa Fe, NM, Oct 24, 2005, to be published in AIP conference proceedings

P. Depommier

Search for Time-Reversal Violation in Kaon Decays

5th Conference on Nuclear and Particle Physics, Cairo, Egypt, November 19-23 2005

* J. Imazato et al.

Search for T-violating Muon Polarization in XXX Decay Using Stopped Kaons KEK-PS Research proposal-, KEK Report 91-8, TRI-91-1, INS Report 895, Nov.1991.

* Y. Kudenko and J. Imazato,

Performance of a High-Resolution CsI(Tl)-PIN Readout Detector KEK Report 92-15, 1992.

* T. Baker et al.

Branching ratio of $K^+ \to \pi^+ \pi^0 \gamma$ direct emission KEK-PS Proposal June 2000.

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