

**Name:** Tan Eng Chye

**Current Position:**

Professor, Department of Mathematics,  
National University of Singapore,  
2, Science Drive 2,  
Singapore 117543

**Email:** [pvotanec@nus.edu.sg](mailto:pvotanec@nus.edu.sg)

**Education:**

- Bachelor in Mathematics (Honours), NUS (1981 - 85)
- M.Sc. and Ph.D. in Mathematics, Yale University (1985 - 89)

**Research Interests:**

- Representation Theory of Lie Groups and Lie Algebras
- Invariant Theory and Algebraic Combinatorics

**Editorial and Conference Organisation:**

- Editorial Board, South East Asian Mathematical Bulletin, from 2002.
- Organising Secretary, Local Organising Committee, International Conference of the Fundamental Sciences, August 2000 in Singapore.
- Co-organizer, Workshop on Representation Theory and Invariant Theory, from 20 March to 22 March 2000, in the National University of Singapore.
- Co-organizer, NUS-JSPS Workshop on Algebra, from 9 July to 13 July 2001 in the National University of Singapore.
- Co-Chairman, Programme on Representation Theory of Lie Groups at the Institute for Mathematical Sciences, Singapore, from 1 July 2002 to 16 January 2003.
- Member, Organising Committee, Satellite Conference on Algebra and Combinatorics, 14 August to 17 August 2002, in the Chinese University of Hong Kong, Hong Kong.
- Member, Organising Committee, Southeast Asian Mathematical Conference, 14 December to 18 December 2003, Yunnan University, Kunming, China.
- Chairman, Steering Committee and Local Organizing Committee, Asian Mathematical Conference 2005, to be held from 23 July to 27 July 2005, at the National University of Singapore, Singapore.

**Invited Addresses:**

- Invited to give a plenary lecture at the International Symposium on Representation Theory and Homogeneous Spaces, 27 July to 1 August 1997 at Okayama, Japan.
- Invited speaker at the KIAS (Korea Institute for Advanced Study) Lie Theory Conference, 5 October to 8 October 1999, in Seoul, Korea.
- Invited speaker at the Workshop on Geometry of Nilpotent Orbits and Representation Theory, 31 January to 3 February 2000, in the University of Kyoto, Japan.
- Invited 40-minute speaker at the Third Asian Mathematical Congress 2000, 23 October to 27 October 2000, in Manila, Philippines.
- Invited speaker at the International Conference on Representation Theory and Automorphic Forms, 1 July to 5 July 2001, in Zhou Shan Island, China.
- Invited speaker at the International Conference on Combinatorics and Applications, 3 December to 5 December 2001, in Hanoi, Vietnam.
- Invited speaker at the Annual Meeting of the Australian Mathematics Society, 7 July to 11 July 2003, Sydney, Australia.
- Invited speaker at the International Symposium on Representation Theory and Harmonic Analysis, 2 August to 8 August 2004, Urumqi, China.
- Invited Speaker, International Conference in Discrete Mathematics with Applications to Information Science and Related Topics, 20 October to 24 October 2004, Chongqing, China.
- Invited Speaker, International Conference on Harmonic Analysis and Quantum Groups, 5 January to 8 January 2005, Kerala, India.
- Invited Speaker, Third Pacific Rim Conference on Mathematics, 17 August to 21 August 2005, Fudan University, Shanghai, China.
- Invited Speaker, International Conference on the Frontiers of Nonlinear and Complex Systems, 24 May to 26 May 2006, Hong Kong Baptist University, Hong Kong Special Administrative Region.

**Teaching Awards**

- Representation Theory of Lie Groups and Lie Algebras
- Invariant Theory and Algebraic Combinatorics

**Publications - Books**

- Howe Roger and Tan Eng-Chye, Non-Abelian Harmonic Analysis -- Applications of  $SL(2, \mathbb{R})$ , Springer-Verlag, New York, Universitext series, 1992, 257 pages.
- Leung Ka Hin, Pang Yu Hin, Peter, Tan Eng-Chye, To Wing Keung, Challenging Problems in Mathematics, Singapore Mathematical Society, 1994, 94 pages.

- Tan Eng-Chye and Zhu Chen-Bo, Representations of Real and p-adic Groups, Editors, Lecture Notes Series, Vol. 2, Institute for Mathematical Sciences, National University of Singapore.

#### Articles in Internationally-refereed Journals:

- Howe Roger and Tan Eng-Chye, Homogeneous functions on light cones: The infinitesimal structure of some degenerate principal series representations, Bulletin of the American Mathematical Society (New Series), 28, No 1, 1993, 1 – 74.
- Tan Eng-Chye, Geometry of weight diagrams of  $U(n)$ , Transactions of the American Mathematical Society, 336, No. 1, 1993, 173 – 192.
- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, Quivers and the invariant theory of Levi subgroups, Journal of Functional Analysis, 120, No 1, 1994, 163 – 187.
- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, Generators and relations of  $2 \times 2$  matrices, Communications of Algebra, 22(5), 1994, 1821 – 1832.
- Aslaksen Helmer and Tan Eng-Chye, Generic  $2 \times 2$  matrices with involution, Manuscripta Mathematica, 83, 1994, 365 – 385.
- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, Invariant theory for special orthogonal groups, Pacific Journal of Mathematics, 168, No. 2, 1995, 207 – 215.
- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, Free resolutions of generic symmetric matrices, Linear Algebra and Its Applications, 230, 1995, 21 – 34.
- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, On a certain ring of highest weight vectors, Journal of Algebra, 174, 1995, 159 – 186.
- Tan Kah-Chye, Goh Say Song and Tan Eng-Chye, A study of the rank-ambiguity issues in direction-of-arrival estimation, IEEE Transactions on Signal Processing, 44, No. 4, April 1996, 880 – 887.
- Tan Kah-Chye, Tan Eng-Chye and Goh Say Song, Counterexamples to a conjecture for characterizing higher rank ambiguities, IEEE Transactions on Signal Processing, 44, No. 4, April 1996, 1028 – 1029.
- Tan Eng-Chye and Zhu Chenbo, Poincare series of holomorphic representations, Indagationes Mathematicae, N. S., 7, No. 1, 1996, 111 – 126.
- Tan Eng-Chye and Tan Ser Peow, Quadratic diophantine equations and two generator Mobius groups, Journal of the Australian Mathematical Society (Series A), 61, 1996, 360 – 368.
- Tan Eng Chye and Zhu Chenbo, On certain distinguished representations supported on null cones, American Journal of Mathematics 120, 1998, 1059 – 1076.
- Annegret Paul and Tan Eng-Chye, On the dual pairs  $(O(p,q), SL(2,R))$ ,  $(U(p,q), U(1,1))$  and  $(Sp(p,q), O^*(4))$ , Pacific Journal of Mathematics 187, 1999, no. 2, 349 – 378.
- Tan Eng-Chye, On the theta lift for the trivial representation, Proceedings of Analysis on Homogeneous Spaces and Representations of Lie Groups, Advanced Studies in Pure Mathematics 26, edited by T. Kobayashi, M. Kashiwara, T. Matsuki, K. Nishiyama and T. Oshima, 213 – 234, 2000.

- Li Jian-Shu, Tan Eng-Chye and Zhu Chen-Bo, Tensor product of Degenerate Principal series and Local Theta Correspondence, Journal of Functional Analysis 186, 2001, 381 – 431.
- Li Jian-Shu, Paul Annegret, Tan Eng-Chye and Zhu Chen-Bo, The Explicit Duality Correspondence of the Dual Pairs ( $O^*(2n)$ ,  $Sp(p,q)$ ), Journal of Functional Analysis 200, 2003, 71 – 100.
- Howe Roger, Tan Eng-Chye and Willenbring Jeb, Stable Branching Rules Classical Symmetric Pairs, Transactions of the American Mathematical Society 357, 2005, 1601 – 1626.
- Roger Howe, Tan Eng-Chye and Jeb Willenbring, A Littlewood-Richardson Basis for the  $GL(n)$  Tensor Product Algebra, Advances in Mathematics 196, 2005, no. 2, 531 – 564.

#### **Articles in Proceedings:**

- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, On  $O(m) \times GL(n)$  highest weight vectors, Proceedings of the Symmetries in Science VIII (Bregenz 1994), edited by Bruno Gruber, Plenum Press, 1 – 11, 1995.
- Aslaksen Helmer, Tan Eng-Chye and Zhu Chenbo, Invariant Theory of Matrices, Proceedings of the Symmetries in Science VIII (Bregenz 1994), edited by Bruno Gruber, Plenum Press, 13 – 21, 1995.

#### **National Service:**

##### Rank:

Deputy Superintendent of Police

##### Appointment:

NS Commanding Officer,  
Yishun South Neighbourhood Police Centre,  
Ang Mo Kio Police Division

#### **Community and Professional Service:**

- Honorary Secretary, Sattha Puchaniyaram Buddhist Temple, 1991 to current.
- Initiated the Sattha Puchaniyaram Buddhist Temple Bursary Awards in 1992 to help students from needy families.
- Initiated the Singapore Mathematical Society (SMS) Enrichment Programmes in 1994.
- Revamped the Singapore Mathematical Olympiads in 1995 to allow more participation from students. The participants for the SMS Olympiads rose from about 600 in 1994 to about 2000 in 1995, to the current 7500 in 2001.
- Initiated a new look and style for the Mathematical Medley, a bi-annual publication of the SMS in 1995.

- Initiated a series of workshops for teachers in 1998, with a view to provide guidance in the supervision and management of mathematics projects in schools.
- Honorary Secretary, Singapore Mathematical Society, 1993-1995.
- Member, Council of the Singapore National Academy of Science, 1993-1995, 2001- 2005.
- President, Singapore Mathematical Society, from 2001 - 2005.
- Member, Ministry of Education Curriculum Committee in Mathematics, from 2002 - 2005.
- President, South East Asian Mathematical Society, 2004 to 2005.