

Ser Peow Tan

Curriculum Vitae, Nov 2006

Contact and Personal Information:

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Date of Birth: 25 July 1960 **Citizenship:** Singaporean

Research interests:

- Geometric structures on manifolds
- Circle Packings on Projective surfaces
- Simple geodesics on surfaces and variations of McShane's identities
- Generalized Markoff maps
- Dynamics of the mapping class group action on relative $SL(2, \mathbb{C})$ character varieties of the one-hole torus and end invariants.
- Trigonometry of hyperbolic 4 space

Education:

- 1984-1988 M.A., Ph.D. University of California, Los Angeles, USA
Doctoral dissertation: Representations of Surface Groups Into $PSL(2, \mathbb{R})$ and Geometric Structures. Thesis advisors: John Millson and William Goldman
- 1979-1982 BA(Hons) Oxford University, UK.

Work Experience:

- 1984-1986: Teaching assistant, University of California, Los Angeles, USA
- 1986-1988: Teaching assistant, University of Maryland, College Park, USA.

- 1988-1989: National Service at the Singapore Police Force (Inspector rank).
- 1989-present: Lecturer (1989-1994) , Senior Lecturer (1994-1998) and Associate Professor (1998-present), Department of Mathematics, National University of Singapore, Singapore.
- Oct 2002-Mar 2003: Visiting Professor, Tokyo Institute of Technology, Tokyo, Japan.

Visiting Positions:

Academic visitor to the following institutions:

University of Maryland, College Park, USA (Dec 2004-Feb 2005, Jan 1996-Sep 1996 and various shorter periods), University of Warwick, UK (Mar 2005-Apr 2005 and various shorter periods), MSRI, USA (visiting member for two months for special year in 1996), Tokyo Institute of Technology, Japan (Oct 2002-Mar 2003 and various shorter periods).

PhD students:

Ying Zhang (July 2004) National University of Singapore.

“Hyperbolic cone-surfaces, generalized Markoff maps, Schottky groups and McShane’s Identity”.

Invited and Contributed Talks:

Workshops and conferences:

- 1990 Conference on hyperbolic geometry in RIMS, Kyoto, Japan (invited, one hour).
- 1992 Conference on Teichmüller theory in Oberwolfach, Germany (invited, one hour).
- Mar 2002 International conference on algebra and its applications, Bangkok, Thailand (contributed, 20 minutes).
- Jul 2002 Summer conference on Topology and its applications, Auckland, New Zealand (contributed, 20 minutes).
- Dec 2002 Conference on Perspectives of hyperbolic spaces, RIMS, Kyoto, Japan (invited, one hour).
- Aug 2003 Conference on Spaces of Kleinian Groups and Hyperbolic 3-Manifolds, Isaac Newton Institute, Cambridge, UK (invited, one hour).

- June 2004, Workshop on Geometric Partial Differential Equations, Institute of Mathematical Sciences, Singapore (invited, one hour).
- Jan 2005 AMS Special session on the dynamics of mapping classes on moduli spaces, Atlanta, Georgia, USA (invited, 20 mins talk).
- June 2005, Third KAIST Geometric Topology Fair, Daejon and Gyeongju, Korea (invited, two 50 minute talks).
- Dec 2005 Workshop on Complex Analysis and Hyperbolic Geometry, RIMS, Kyoto, Japan (invited, three 50 minute talks).
- Dec 2005 TMS/AMS First Joint meeting, special session on differential geometry, Taichung, Taiwan (contributed, 20 mins).
- Jan 2006 Manifolds at Melbourne, Melbourne, Australia (one hour talk).
- Aug 2006 Workshop on analytic aspects of low dimensional geometry, Warwick, UK (invited talk).

Colloquium Talks:

- Jan 2003 Tokyo Institute of Technology, Japan.
- Jan 2005 Temple University, USA
- Apr 2005 University of Warwick, UK.
- May 2005 Osaka City University, Osaka, Japan.
- Sep 2006 National Cheng Kung University, Taiwan.

Seminar Talks (recent, last two years):

- Feb 2005 Complex Analysis seminar, Graduate center, CUNY, USA.
- Feb 2005 Geometry-Topology seminar, University of Maryland, College Park, USA
- Mar 2005 Hyperbolic geometry seminar, University of Warwick, UK.
- Apr 2005 Geometry and topology seminar, Universite Paul Sabatier, Toulouse, France.
- May 2005 Osaka University, Osaka, Japan.
- June 2005 Tokyo Metropolitan University, Tokyo, Japan.
- June 2005 Tokyo Institute of Technology, Tokyo, Japan.
- June 2006 Geometry-Topology (summer) seminar, University of Maryland, College Park, USA
- Sep 2006 National Center for Theoretical Sciences, Tainan, Taiwan.

List of Publications:

1. Yoshinobu Kamishima and Ser Peow Tan, Deformation spaces on geometric structures, *Advanced Studies in Pure Mathematics*. 20, pp 263-299, 1992.
2. Ser Peow Tan, Deformations of flat conformal structures on a hyperbolic 3-manifold, *Journal of Differential Geometry*. 37, pp 161-176, 1993.
3. Mong Lung Lang, Chong-Hai Lim and Ser Peow Tan, Subgroups of the Hecke Groups with small index, *Linear & Multilinear Algebra*. 35, pp 75-77, 1993.
4. Shih-Ping Chan, Mong Lung Lang, Chong-Hai Lim, and Ser Peow Tan. Some Invariants of $\Gamma_0(N)$, *Linear and Multilinear Algebra*. 35 79-81, 1993.
5. Shih-Ping Chan, Mong Lung Lang, Chong-Hai Lim, and Ser Peow Tan, Special Polygons for subgroups of the Modular group and Applications, *International Journal of Mathematics*, 4-1, pp 11-34, 1993.
6. Shih-Ping Chan, Mong Lung Lang, Chong-Hai Lim, and Ser-Peow Tan, The Invariants of the Congruence Subgroups $G_0(\mathcal{P})$ of the Hecke Group G_5 , *Illinois Journal of Mathematics*, 38-4, pp 636-652, 1994.
7. Ser Peow Tan, Complex Fenchel-Nielsen Coordinates for Quasi-Fuchsian Structures, *International Journal of Mathematics*, 5-2, pp 239-251, 1994.
8. Ser Peow Tan, Conformally flat 3-manifolds and Euclidean Polyhedra, *Communications in Analysis and Geometry*, 2-3, pp 1-15, 1994.
9. Ser Peow Tan, Branched CP^1 -structures on surfaces with prescribed real holonomy, *Mathematische Annalen*, 300, pp 649-667, 1994.
10. Ser Peow Tan, Singular pleated surfaces and CP^1 -structures, *Glasgow Mathematical Journal*, 37, pp 179-190, 1995.
11. Mong Lung Lang, Chong-Hai Lim and Ser Peow Tan, An algorithm for determining if a subgroup of the modular group is congruence, *Journal of the London Math. Soc.*, 51, pp 491-502, 1995.
12. Mong Lung Lang, Chong-Hai Lim and Ser Peow Tan, Independent generators for Congruence subgroups of the Hecke Groups, *Mathematische Zeitschrift*, 220, pp 569-594, 1995.
13. Ser Peow Tan, Self-intersections of curves on surfaces, *Geometriae Dedicata*, 62, pp 209-225, 1996.
14. Eng Chye Tan and Ser Peow Tan, Quadratic diophantine equations and two generator Möbius Groups, *Journal of Australian Math. Soc. series A*, 61 (1996), 360-368.

15. Ser Peow Tan, Quasi-fuchsian structures on hyperbolic 3-manifolds admitting a decomposition into ideal tetrahedra, *Archiv der Mathematik*, 66, pp 243-249, 1996.
16. Mong Lung Lang and Ser Peow Tan, Normalizers of the congruence subgroups of the Hecke group G_5 . *Proc. Amer. Math. Soc.* 127 (1999), no. 11, 3131–3140.
17. Mong Lung Lang and Ser Peow Tan, Normalizers of the congruence subgroups of the Hecke group G_5 . II. *Proc. Amer. Math. Soc.* 128 (2000), no. 8, 2271–2280.
18. Mong Lung Lang, Chong-Hai Lim and Ser Peow Tan, Principal congruence subgroups of the Hecke groups. *J. Number Theory* 85 (2000), no. 2, 220–230.
19. Sadayoshi Kojima, Shigeru Mizushima and Ser Peow Tan, Circle packings on surfaces with projective structures. *J. Differential Geom.* 63 (2003), no. 3, 349–397.
20. Ser Peow Tan, Yan Loi Wong and Ying Zhang, The $SL(2, \mathbf{C})$ character variety of the one-holed torus (research announcement), *Electron. Res. Announc. Amer. Math. Soc.* 11 (2005), 103-110.
21. Sadayoshi Kojima, Shigeru Mizushima and Ser Peow Tan, Circle packings on surfaces with projective structures and uniformisation. *Pacific Journal of Mathematics*, 225 No. 2, (2006), 287-300.
22. Ser Peow Tan, Yan Loi Wong and Ying Zhang, Generalizations of McShane’s identity to hyperbolic cone-surfaces, *J. Differential Geom.* 72 (2006), 73-112.
23. Ser Peow Tan, Yan Loi Wong and Ying Zhang, Necessary and sufficient conditions for McShane’s identity and variations, *Geometriae Dedicata*, 119 No. 1 (2006), 119-217.
24. Sadayoshi Kojima, Shigeru Mizushima and Ser Peow Tan, Circle packings on surfaces with projective structures: A survey. To appear, “Spaces of Kleinian groups”, *London Math. Soc. Lect. Notes Series* (No. 329), Cambridge University Press.

Preprints:

- Ser Peow Tan, Yan Loi Wong and Ying Zhang, McShane’s identity for classical Schottky groups, *Math. ArXiv math.GT/0411628*, submitted for publication.
- Ser Peow Tan, Yan Loi Wong and Ying Zhang, Generalized Markoff maps and McShane’s identity, *Math. ArXiv math.GT/0502464*, submitted for publication.

- Mong Lung Lang, Ser Peow Tan, A simple proof of the Markoff conjecture for prime powers, Math. ArXiv math.NT/0508443, submitted for publication.
- Ser Peow Tan, Yan Loi Wong and Ying Zhang, End invariants for $SL(2, \mathbf{C})$ characters of the one-holed torus, Math. ArXiv math.GT/0511621, submitted for publication.
- Shawn Pheng Keong Ng and Ser Peow Tan, The complement of the Bowditch space in the $SL(2, \mathbf{C})$ character variety, preprint, submitted for publication.