Željko Čučković

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Education

Ph.D. in Mathematics, Michigan State University, 1991

M.S. in Mathematics, University of Zagreb, Croatia, 1985

B.S. in Mathematics, University of Zagreb, Croatia, 1979

Employment

8/05 - present: Professor, Department of Mathematics, University of Toledo. Also an Associate Chair from 2005-2010.

09/16 - 11/16: Visiting Professor, Department of Mathematics, University of Iowa

01/08 - 05/08: Visiting Professor, Department of Mathematics, Vanderbilt University

8/01 - 7/05: Associate Professor, Department of Mathematics, University of Toledo

8/00 - 7/01: Visiting Associate Professor, Department of Mathematics, University of Wisconsin-Madison

9/99 - 7/00: Associate Professor, Department of Mathematics, University of Toledo

9/94 - 8/99: Assistant Professor, Department of Mathematics, University of Toledo

9/92 - 8/94: Assistant Professor, Department of Mathematics, University of Wisconsin Centers, Waukesha

3/91 - 6/92: Instructor, Department of Mathematics, Michigan State University

9/87 - 2/91: Teaching Assistant, Department of Mathematics, Michigan State University

9/80 - 7/87: Teaching Assistant, Faculty of Technology, University of Zagreb

Research Interests

- Functional Analysis and Operator Theory

- Complex Analysis in One and Several Variables

Awards

- University of Toledo **Faculty Excellence Award**, College of Arts and Sciences, 2010

- University of Toledo **Outstanding Teacher Award**, 2006.

- University of Toledo summer research grant, 1997.

- University of Wisconsin summer research grant, 1993.

Publications

1. (with Zhenghui Huo and Sonmez Sahutoglu) *On spectra of Hankel operators on the polydisc*, submitted.

2. (with Zhenghui Huo and Sonmez Sahutoglu) *Zero products of Toeplitz operators on Reinhardt domains*, Canad. Math. Bull. **65** (2022), 170-179.

3. (with Michael Stessin and Alexandre Tchernev) *Determinantal hypersurfaces and representation of Coxeter groups*, Pacific J. Math. **313** (2021), 103-135.

4. *Projected composition operators on pseudoconvex domains*, Integral Equations Operator Theory **93** (2021), Paper Number 35, 11 pp.

5. (with Sonmez Sahutoglu) *Berezin regularity of domains in $\mathbb{C}^n$ and the essential norms of Toeplitz operators*, Trans. Amer. Math. Soc. **374** (2021), 2521-2540.

6. (with Sonmez Sahutoglu and Yunus Zeytuncu) *A local weighted Axler-Zheng theorem in $\mathbb{C}^n$*, Pacific J. Math. **294** (2018), 89-106.

7. (with Sonmez Sahutoglu) *Essential norm estimates for the dbar-Neumann operator on convex domains and worm domains*, Indiana University Math. J. **67** (2018), 267-292.

8. (with Raul Curto) *A new necessary condition for the hyponormality of Toeplitz operators on the Bergman space*, J. Operator Theory **79** (2018), 287-300.

9. (with Bhupendra Paudyal) *The lattices of invariant subspaces of a class of operators on the Hardy space*, Arch. Math. (Basel) **110** (2018), 477-486.

10. (with Anthony Vasaturo) *Carleson measures and Douglas' question on the Bergman space*, Rend. Circ. Mat. Palermo **67** (2018), 323-336.

11. (with Sonmez Sahutoglu) *Essential norm estimates for Hankel operators on convex domains in $\mathbb{C}^2$*, Math. Scand. **120** (2017), 305-316.

12. *Estimates of the L^p norms of the Bergman projection on strongly pseudoconvex domains*, Integral Equations Operator Theory **88** (2017), 331-338.

13. (with Trieu Le) *Adjoints of linear fractional composition operators on weighted Hardy spaces*, Acta Sci. Math. (Szeged) **82** (2016), 651-662.

14. (with Yunus Zeytuncu) *Mapping properties of weighted Bergman projection operators on Reinhardt domains*, Proc. Amer. Math. Soc. **144** (2016), 3479-3491.

15. (with Bhupendra Paudyal) *Invariant subspaces of the shift plus complex Volterra operator*, J. Math. Anal. Appl. **426** (2015), no. 2 1174-1181.

16. (with Sonmez Sahutoglu) *Compactness of products of Hankel operators on convex Reinhardt domains in* $\mathbb{C}^2$, New York J. Math. **20** (2014), 627-643.

17. (with Trieu Le) *Toeplitzness of composition operators in several variables*, Complex Var. Elliptic Equ. **59** (2014), 1351-1362.

18. (with Sonmez Sahutoglu) *Axler-Zheng type theorem on a class of domains in* $\mathbb{C}^n$, Integral Equations Operator Theory **77** (2013), 397-405.

19. (with Mehdi Nikpour) *On the Toeplitzness of the adjoint of composition operators*, J. Math. Anal. Appl. **408** (2013), no. 2 541-17546.

20. (with Trieu Le) *Toeplitz operators on Bergman spaces of polyanalytic functions*, appear in Bull. London Math. Soc. **44** (2012), no. 5, 961-17973.

21. (with Bo Li) *Berezin transform, Mellin transform and Toeplitz operators*, Complex Anal. Oper. Theory **6** (2012), 189–218.

22. (with Sonmez Sahutoglu) *Compactness of products of Hankel operators on the polydisk and some product domains in* $\mathbb{C}^2$, J. Math. Anal. Appl. **371** (2010), 341–346.

23. (with Sonmez Sahutoglu) *Compactness of Hankel operators and analytic discs in the boundary of pseudoconvex domains*, J. Funct. Anal. **256** (2009), no. 11, 3730–3742.

24. (with Issam Louhichi) *Finite rank commutators and semicommutators of quasihomogeneous Toeplitz operators*, Complex Anal. Oper. Theory **2** (2008), no. 3, 429–439.

25. *Finite rank perturbations of Toeplitz operators*, Integral Equations Operator Theory **59** (2007), no. 3, 345–353.

26. (with Ruhan Zhao) *Essential norm estimates of weighted composition operators between Bergman spaces on strongly pseudoconvex domains*, Math. Proc. Cambridge Philos. Soc. **142** (2007), no. 3, 525–533.

27. (with Ruhan Zhao) *Weighted composition operators between different weighted Bergman spaces and different Hardy spaces*, Illinois J. Math., **51** (2007), 479–498.

28. (with Jeffery D. McNeal) *Special Toeplitz operators on strongly pseudoconvex domains*, Rev. Mat. Iberoam. **22** (2006), no. 3, 851–866.

29. (with N. V. Rao) *Maximality theorems for Frechet algebras*, Proc. Amer. Math. Soc., **134** (2006), 487–490.

30. (with Joseph A. Cima) *Compact Toeplitz operators with unbounded symbols*, J. Operator Theory **53** (2005), no. 2, 431–440.

31. (with Ruhan Zhao) *Weighted composition operators on the Bergman space*, J. London Math. Soc. (2) **70** (2004), no. 2, 499–511.

32. (with Patrick Ahern) *Some examples related to the Brown-Halmos theorem for the Bergman space*, Acta Sci. Math. (Szeged) **70** (2004), no. 1-2, 373–378.

33. *Berezin versus Mellin*, J. Math. Anal. Appl. **287** (2003), no. 1, 234–243.

34. (with Patrick Ahern) *A theorem of Brown-Halmos type for Bergman space Toeplitz operators*, J. Funct. Anal., **187** (2001), 200–210.

35. (with Nasser Towghi) *Sample paths of* α-*chaos*, J. Math. Anal. Appl., **264** (2001), 682–686.

36. (with Patrick Ahern) *Products of Toeplitz operators on the Bergman space*, Illinois J. Math., **45** (2001), 113–121.

37. (with Sheldon Axler and N. V. Rao) *Commutants of analytic Toeplitz operators on the Bergman space*, Proc. Amer. Math. Soc., **128** (2000), 1951–1953.

38. (with Kit Chan) *C*-algebras generated by a subnormal operator*, Trans. Amer. Math Soc., **351** (1999), 1445–1460.

39. (with N. V. Rao) *Mellin transform, monomial symbols and commuting Toeplitz operators*, J. Funct. Anal., **154** (1998), 195–214.

40. *Commuting Toeplitz operators on the Bergman space of an annulus*, Michigan Math. J., **43** (1996), 355–365.

41. (with Patrick Ahern) *A mean value inequality with applications to Bergman space operators*, Pacific J. Math., **173** (1996), 295–305.

42. (with Patrick Ahern) *An invariant submean value property and hyponormal Toeplitz operator*, Contemporary Math., **189** (1995), 17–24.

43. (with Dashan Fan) *Commutants of Toeplitz operators on the ball and annulus*, Glasgow Math. J., **37** (1995), 303–309.

44. *Commutants of Toeplitz operators on the Bergman space*, Pacific J. Math., **162** (1994), 277–285.

45. (with Sheldon Axler) *Commuting Toeplitz operators with Harmonic Symbols*, Integral Equations Operator Theory, **14** (1991), 1–12.

Invited Lectures

- "Berezin regularity of domains in C^n", International Workshop in Operator Theory and Applications, Chapman University, Orange, California, August 9-13, 2021.

- "On the essential norm and regularity of the Berezin transform of Toeplitz operators on pseudoconvex domains in C^n", Workshop on Function Spaces and Operator Theory, Hanoi, Vietnam, June 23-28, 2019.

- "Compactness of Toeplitz operators on domains in C^n", Colloquium at the University of Central Florida, Orlando, March 1, 2019.

- "Essential norm estimates of Hankel operators on convex domains" and "Local Axler-Zheng theorem in $\mathbb{C}^n$", International Workshop in Operator Theory and Applications, Shanghai, China, July 23-27, 2018.

- "Axler-Zheng theorem in $\mathbb{C}^n$", AMS Sectional Meeting, Nashville, Tennessee, April 14-15, 2018.

- "Compactness of Toeplitz and Hankel operaors on domains in $\mathbb{C}^n$", AMS Sectional Meeting, Columbus, Ohio, March 17-18, 2018.

- "From the $\overline{\partial}$-Neumann operator to Hankel operators and back", Colloquium talk, University of Iowa, October 2016.

- "Essential norm estimates of the $\overline{\partial}$-Neumann operator", Colloquium talk, University of Albany, NY, September 2016.

- "From the $\overline{\partial}$-Neumann operator to Hankel operators and back", Midwest several complex variables conference, University of Toledo, May 2016.

- "Mapping properties of weighted Bergman projections on Reinhardt domains", Workshop on analytic function spaces and operators on them, Sanya, China, December 2015.

- "Essential norm estimates for Hankel operators on convex domains", Analysis Day at the University of Michigan-Dearborn, April 2015.

- "Mapping properties of weighted Bergman projections on Reinhardt domains", AMS Sectional Meeting, E. Lansing, Michigan, March 14-15, 2015.

- "Essential norm estimates for Hankel operators on convex domains in C^n", Special Session *Progress in Multivariable operator theory*, Joint AMS-MAA meeting, San Antonio, Texas, January 10-13, 2015.

- "Compactness of Hankel and Toeplitz operators on Bergman spaces", Colloquium talk, University of Western Ontario, London, ON Canada, October 26, 2014

- "From the D-bar Neumann operator to Axler-Zheng theorem", Special Session *Toeplitz Operators and Its Applications*, International Workshop in Operator Theory and Applications, Amsterdam, Netherlands, July 14-18, 2014.

- "From the D-bar Neumann operator to Axler-Zheng theorem", Special Session *Complex Analysis and Function Spaces*, Summer Meeting of the Canadian Mathematical Society, Winipeg, Manitoba, June 6-9, 2014.

- "Axler-Zheng type theorem on domains in C^n", Special Session *Recent Progress in Multivariable operator theory*, Joint AMS-MAA meeting, Baltimore, Maryland, January 15-18, 2014.

- "Compactness of Hankel and Toeplitz operators on domains in C^n", Mathematical Congress of the Americas, Guanajuato, Mexico, August 5-9, 2013.

- "Compactness of Hankel operators on Bergman spaces", Colloquium talk, SUNY at Albany, March 2013.

- "Berezin transform on Bergman spaces of polyanalytic spaces", Special Session, *Complex Analysis and its Broader Impact*, AMS Sectional Meeting, Akron, OH, October 20-21, 2012.

- "Compactness of products of Hankel operators on convex domains", Special Session, *Operator Theory and Function Spaces*, AMS Sectional Meeting, Rochester, NY, September 2012.

- "Compactness of Hankel operators", Seminar talk at Ohio State University, February 2012.

- "Toeplitz operators on Bergman spaces of polyanalytic functions", Special Session, *Holomorphic Spaces*, AMS Sectional Meeting, University of Hawaii, Honolulu, HI, March 2012.

- "Compactness of Hankel operators on convex domains", Special Session, *Several Complex Variables and Multivariable Operator Theory*, Joint AMS-MAA meeting, Boston, MA, January 2012.

- "Compactness of Hankel operators on pseudoconvex domains", Special Session, *Complex Analysis and Potential Theory*, AMS Sectional Meeting, University of Kentucky, Lexington, Kentucky, March 27 – 28, 2010.

- "Compactness of Hankel operators and boundary geometry", Recent Advances in Function Related Operator Theory, Rincon, Puerto Rico, March 22 – 26, 2010.

- "Compactness of Hankel operators and boundary geometry on pseudoconvex domains", Erwin Schroedinger International Institute for Mathematical Physics, Vienna, Austria, December 2009.

- "Products of Toeplitz operators", Seminar talk at Ohio State University, October 2008.

- "Weighted composition operators", Fourth Croatian Mathematical Congress, Osijek, Croatia, June 17 – 21, 2008 and the University of Iowa, November 2008.

- "Special Toeplitz operators that improve integrability", Seminar talk at the University of Michigan and University of Bordeaux, France, November 2008.

- "Weighted composition operators between Bergman spaces on strongly pseudoconvex domains", Special Session, *Several Complex Variables*, AMS Sectional Meeting, Miami University, Oxford, Ohio, March 16 – 17, 2007.

- "Finite rank perturbations of Toeplitz operators", Southeastern Analysis Meeting, University of Richmond, Virginia, March 9 – 11, 2007, and the University of Krakow, Poland, August 4, 2007.

- "Weighted composition operators between Bergman spaces on strongly pseudoconvex domains", Invited Talk at the Department of Mathematics, University of Bordeaux I, May 31, 2006.

- "Weighted composition operators between Bergman spaces on strongly pseudoconvex domains", Recent Advances in Operator Related Function Theory, El Escorial, Spain, October 6 – 8, 2005.

- "Certain operators on Bergman spaces on strongly pseudoconvex domains that improve integrability", International Workshop on Function Theory, Korea University, Seoul, South Korea, June 21 – 24, 2005.

- "Maximality theorems for Frechet algebras," Special Session *Operator Theory on Function Spaces*, AMS Sectional Meeting, Vanderbilt University, Nashville, Tennessee, October 16 – 17, 2004.

- "Weighted composition operators on the Bergman space", Special Session *Operator Theory and Spaces of Analytic Functions*, First joint AMS-Real Sociedad Matematica Espanola meeting, Sevilla, Spain, June 18 – 21, 2003.

- "Counterexamples to the Brown-Halmos theorem for the Bergman space Toeplitz operators," Southeastern Analysis Meeting, University of North Carolina-Chapel Hill, Chapel Hill, North Carolina, March 15 – 17, 2002.

- "Brown-Halmos theorem for the Bergman space Toeplitz operators," Invited colloquium talk at Bowling Green State University, October 2001.

- "Product of Toeplitz operators with harmonic symbols," Special Session *Holomorphic Spaces*, AMS Sectional Meeting, San Francisco State University, San Francisco, California, October 21 – 22, 2000.

- "Product of Toeplitz operators on the Bergman space," International Functional Analysis Meeting, Valencia, Spain, July 3 – 7, 2000.

- "Product of Toeplitz operators on the Bergman space," Wabash Modern Analysis Miniconference, IUPUI, Indianapolis, Indiana, October 30 – 31, 1999.

- "Zero products of Toeplitz operators on the Bergman space," Special Session *Banach Spaces of Holomorphic Functions and Operators on These Spaces*, Joint AMS-MAA Annual Meeting, San Antonio, Texas, January 13 – 16, 1999.

- "An annulus mean value property and harmonic functions," First Croatian Mathematical Congress, Zagreb, Croatia, July 18 – 20, 1996.

- "An invariant submean value property", Invited colloquium talks at Bowling Green State University and Cleveland State University, October 1994.

- "An annulus mean value property and Toeplitz operators," *Bergman Spaces and the Operators on These Spaces*, Joint Summer Research Conference in the Mathematical Sciences, Mount Holyoke College, South Hadley, Massachusetts, July 9 – 15, 1994.

- "An invariant submean value property and hyponormal Toeplitz operators," International Conference on Harmonic Analysis and Operator Theory, Caracas, Venezuela, January 3 – 8, 1994.

- "A mean value inequality and hyponormal Toeplitz operators," Wabash Modern Analysis Miniconference, Indiana University, Bloomington, Indiana, October 2 – 3, 1993.

- "Commutants of Toeplitz operators on the Bergman space", Joint AMS-MAA Annual Meeting, Baltimore, Maryland, January 8 – 11, 1992.

PhD students

- Mehdi Nikpour 2012

- Amila Appuhamy 2013

- Bhupendra Paudyal 2014

- Anthony Vasaturo 2018

- Krishna Subedi 2018

Service to professional associations

- Served on an NSF Panel, Alexandria, Virginia, December 1-4, 2019.

- Co-organizer of a Workshop *Representation Theory and Multivariable Spectral Theory* at the Banff International Research Station, Banff, Canada, March 31-April 4, 2019.

- Co-Organizer of the Special Session *Several Complex Variables Techniques in Operator Theory*, Annual Joint AMS-MAA meeting in San Diego, January 2013.

- Organizer of the Special Session *Interplay between Operator Theory and the $\bar{\partial}$-Neumann problem*, IWOTA 2010, Berlin, Germany, July 12 – 16, 2010.

- Co-Organizer of the Special Session *Complex Analysis and Operator Theory*, First Joint Meeting between the American Mathematical Society and Polish Mathematical Society, Warsaw, Poland, July 31 – August 3, 2007.

- Organizer of the Special Session *Operator Theory and Function Spaces*, AMS Sectional Meeting, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin, October 24 – 25, 1997.

Editorial work

- Journal of Mathematical Analysis and Applications, Associate Editor

Memberships

- American Mathematical Society