



SAEED SALEHI Ph.D. in Mathematics

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Affiliation and Positions

- [University of Tabriz](#), Tabriz, Iran (since 2007). Associate Professor (since 2013).
 - (Elected) Member of the Board of Directors of the [Iranian Association for Logic](#) (since 2019).
 - An Editor of the [Journal of the Iranian Mathematical Society](#) (since 2019).
 - (Volunteer) Member of the Scientific Committee of [Tabriz Math House](#), Tabriz, Iran (since 2014).
 - Researcher (Grantee) at the [Institute for Research in Fundamental Sciences](#), Tehran, Iran (2010–2020).

Education and Degrees

Postgraduate Studies

- (2005) Ph.D. in *Theoretical Computer Science*, from University of Turku (UTU), Turku, Finland.
 Supervisor: M. STEINBY. Awarded study funds by Turku Centre for Computer Science (TUCS).
 Dissertation: *Varieties of Tree Languages*.
- (2002) Ph.D. in *Mathematical Logic*, from Polish Academy of Sciences (PAN), Warsaw, Poland.
 Supervisor: Z. ADAMOWICZ. Awarded study funds by the Institute of Mathematics (IMPAN).
 Dissertation: *Herbrand Consistency in Arithmetics with Bounded Induction*.

Undergraduate Studies

- (1997) B.Sc. in *Pure Mathematics*, from [Sharif University of Technology](#), Tehran, Iran.
Graduated with Distinction, and the First Rank in the National Mathematical Olympiad 1997.

Research Interests

Mathematics

Mathematical Logic (Axiomatic Systems, Decidability, and Axiomatizability).

Computer Science

Theory of Computability, and Complexity Theory (and relations with Logic).

Philosophy

Philosophy of Mathematics (Constructivity, Intuitionism, and Incompleteness).

Publications

Journal Papers (Refereed)

- (2022) [Tarski's undefinability theorem and the diagonal lemma](#), *Logic Journal of the IGPL* (forthcoming).
- (2022) [“Sometime a paradox”, now proof: Yablo is not first order](#), *Logic Journal of the IGPL* (forthcoming).
- (2021) [with K. LAJEVARDI]; [There may be many arithmetical Gödel sentences](#), *Philosophia Mathematica* 29(2):278–287.
- (2021) [From intuitionism to many-valued logics through Kripke models](#), in: M. Mojtahedi et al. (eds.), *Mathematics, Logic, and their Philosophies: Essays in Honour of Mohammad Ardeshir*, Springer, pp. 339–348.
- (2020) [Gödel's second incompleteness theorem: how it is derived and what it delivers](#), *The Bulletin of Symbolic Logic* 26(3-4):241–256.

- (2020) On the diagonal lemma of Gödel and Carnap, *The Bulletin of Symbolic Logic* 26(1):80–88.
- (2020) On rudimentarity, primitive recursivity and representability, *Reports on Mathematical Logic* 55:73–85.
- (2020) [with M. ZARZA]; First-order continuous induction, and a logical study of real closed fields, *Bulletin of the Iranian Mathematical Society* 46(1):225–243.
- (2019) [with K. LAJEVARDI]; On the arithmetical truth of self-referential sentences, *Theoria: A Swedish Journal of Philosophy* 85(1):8–17.
- (2019) [with Z. ASSADI]; On decidability and axiomatizability of some ordered structures, *Soft Computing* 23(11):3615–3626.
- (2018) [with P. SERAJI]; On constructivity and the Rosser property: a closer look at some Gödelean proofs, *Annals of Pure and Applied Logic* 169(10):971–980.
- (2018) On axiomatizability of the multiplicative theory of numbers, *Fundamenta Informaticæ* 159(3):279–296.
- (2018) [with P. SAFARI]; Kripke semantics for fuzzy logics, *Soft Computing* 22(3):839–844.
- (2017) [with P. SERAJI]; Gödel-Rosser’s incompleteness theorem: Generalized and optimized for definable theories, *Journal of Logic and Computation* 27(5):1391–1397.
- (2017) [with A. KARIMI]; Diagonal arguments and fixed points, *Bulletin of the Iranian Mathematical Society* 43(5):1073–1088.
- (2014) Gödel’s incompleteness phenomenon—computationally, *Philosophia Scientiæ* 18(3):23–37.
- (2013) Herbrand consistency of some finite fragments of bounded arithmetical theories, *Archive for Mathematical Logic* 52(3-4):317–333.
- (2012) Herbrand consistency of some arithmetical theories, *The Journal of Symbolic Logic* 22(3):807–827.
- (2012) Separating bounded arithmetical theories by Herbrand consistency, *Journal of Logic and Computation* 77(3):545–560.
- (2007) [with M. STEINBY]; Varieties of many-sorted recognizable sets, *Pure Mathematics and Applications* 18(3-4):319–343.
- (2007) [with M. STEINBY]; Tree algebras and varieties of tree languages, *Theoretical Computer Science* 377(1-3):1–24.
- (2005) [with T. PETKOVIĆ]; Positive varieties of tree languages, *Theoretical Computer Science* 347(1):1–35.
- (2005) Varieties of tree languages definable by syntactic monoids, *Acta Cybernetica* 17(1):21–41.
- (2005) Congruence preserving functions of Wilke’s tree algebras, *Algebra Universalis* 53(4):451–470.
- (2005) Polynomially bounded recursive realizability, *Notre Dame Journal of Formal Logic* 46(4):407–417.
- (2003) Provably total functions of Basic Arithmetic, *Mathematical Logic Quarterly* 49(3):316–322.
- (2003) [with M. ARDESHIR & W. RUITENBURG]; Intuitionistic axiomatizations for bounded extension Kripke models, *Annals of Pure and Applied Logic* 124(1-3):267–285.
- (2002) Decidable formulas of intuitionistic Primitive Recursive Arithmetic, *Reports on Mathematical Logic* 36:55–61.

Conference Papers (Short-refereed)

- (2012) Axiomatizing mathematical theories: Multiplication, in: A. Kamali-Nejad (ed.), *Proceedings of Frontiers in Mathematical Sciences*, Fundamental Education Publications, pp. 165–176.
- (2012) Computation in logic and logic in computation, in: B. Sadeghi-Bigham (ed.), *Proceedings of the 3rd International Conference on Contemporary Issues in Computer and Information Sciences*, Brown Walker Press, pp. 580–583.
- (2003) A completeness property of Wilke’s tree algebras, in: B. Rován & P. Vojtáš (eds.), *Proceedings of the Mathematical Foundations of Computer Science (MFCS’03)*, LNCS 2747, Springer, pp. 662–670.
- (2001) Unprovability of Herbrand consistency in weak arithmetics, in: K. Striegnitz (ed.), *Proceedings of the (6th) Student Session of the (13th) European Summer School in Logic, Language and Information (ESSLLI’01)*, pp. 265–274.

Manuscripts (Not refereed)

- (2021) [with [K. LAJEVARDI](#)]; On a certain fallacy concerning I-Am-Unprovable sentences, *manuscript*.
- (2020) [with [Z. ASSADI](#)]; On the truth of Gödelian and Rosserian sentences, arXiv:2009.00323.
- (2020) *Axiomatic (and non-axiomtic) mathematics*, arXiv:2008.08283.
- (2015) *Theorems of Tarski's undefinability and Gödel's second incompleteness—computationally*, arXiv:1509.00164.
- (2014) [with [A. KARIMI](#)]; *Theoremizing Yablo's paradox*, arXiv:1406.0134.

Editorial Services**Reviewer for**

- *Zentralblatt MATH (zbMATH)* of the European Mathematical Society (EMS). *Distinguished Reviewer 2014*.
- *Mathematical Reviews (MR)* of the American Mathematical Society (AMS).

Referee for

- *Theoretical Computer Science (TCS)* of Elsevier).
- *The Review of Symbolic Logic (RSL)* of the Association for Symbolic Logic).
- *International Journal of Foundations of Computer Science (IJFCS)* of World Scientific).
- *Philosophia Mathematica (PhilMath)* of Oxford University Press).
- *Bulletin of the Iranian Mathematical Society (BIMS)* of Springer).
- *Discussiones Mathematicæ—General Algebra and Applications (DMGAA)*.
- *Notre Dame Journal of Formal Logic (NDJFL)* of University of Notre Dame).
- Proceedings of the 24th *International Workshop on Logic, Language, Information, and Computation (WoLLIC 2017)*, 18–21 July 2017, London, United Kingdom (LNCS 10388, Springer 2017).
- Proceedings of the 13th *International Conference on Automata and Formal Languages (AFL'11)*, 17–22 August 2011, Debrecen, Hungary, P. Dömösi & S. Iván (eds.), Nyíregyháza College.
- Proceedings of the 31st *International Colloquium on Automata, Languages and Programming (ICALP'04)*, 12–16 July 2004, Turku, Finland (LNCS 3142, Springer 2004).
- Iran National Science Foundation ([INSF](#)).
- *Iranian Journal of Mathematical Sciences and Informatics (IJMSI)* of TMU).

Conferences and Visits**Organization** (a selection)

- (2010) Chair of [Tabriz Seminar on Mathematical Logic](#), University of Tabriz, Iran, 27–28 October 2010.
- (2007) A member of the Scientific Committee of the 38th Annual Iranian Mathematics Conference ([AIMC'38](#)), Zanjan University, Zanjan, Iran, 3–6 September 2007.

Invited Talks (a selection)

- (2021) International Workshop on Gödel's Incompleteness Theorems [online] ([Wuhan'21](#)), Wuhan University, Wuhan, China, 16–20 August 2021. ([Poster of the Workshop](#).)
Title: *Some Fairies in the Incompleteness Wonderland*.
- (2021) Celebrating 90 Years of Gödel's Incompleteness Theorems [online and on site] ([Tübingen'21](#)), Carl Friedrich von Weizsäcker Center, Nürtingen, Germany, 5–9 July 2021.
Title: *The Diagonalization Lemma – Demystified Hopefully*.
- (2017) Workshop on Proof Theory, Modal Logic and Reflection Principles ([Wormshop'17](#)), Steklov Mathematical Institute, Moscow, Russia, 17–20 October 2017. Title: *Diagonal-Free Proofs of the Diagonal Lemma*.

- (2016) Meta–arithmetical Results and their Philosophical Meaning (Swamplandia’16), Faculty of Arts and Philosophy, Ghent University, Ghent, Belgium, 30 May–1 June 2016.
Title (Tutorial): *Gödel’s Incompleteness Theorem: Constructivity of its Various Proofs*.
Title (Talk): *Theoremizing Paradoxes: Turning Puzzles into Proofs*.
- (2016) IPM-Isfahan Workshop on Various Aspects of Modality (Isfahan’16), IPM-Isfahan Branch, Isfahan, Iran, 12 May 2016. Title: *Turning Yablo’s Paradoxes into Modality Theorems*.
- (2014) The 10th International Tbilisi Summer School in Logic and Language (Tbilisi’14), Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, 22–27 September 2014.
Title (Tutorial): *Axiomatic Mathematics: Issues of Decidability in Logic*.
- (2012) The 3rd International Conference on Contemporary Issues in Computer and Information Sciences (CICIS’12), the Institute for Advanced Studies in Basic Sciences, Zanzan, Iran, 29–31 May 2012.
Title: *Computation in Logic and Logic in Computation*.
- (2008) Foundations and Trends in Computer Science (FTCS’08), Winter School by IPM School of Computer Science and United Nations University, IPM, Tehran, Iran, 31 January–10 February 2008.
Title (Tutorial): *Logics in Computer Science*.
- (2007) IPM Logic Conference (IPM-LC’07), IPM, Tehran, Iran, 10–15 June 2007.
Title: *Modal Logic of Herbrand Consistency in Weak Arithmetics*.
- (2006) Algebraic Theory of Automata and Logic (ATAL’06), a satellite event of the conference Computer Science Logic (CSL’06), Szeged, Hungary, 30 September–1 October 2006.
Title: *Characterizing Families of Tree Languages by Syntactic Monoids*.

Contributed Talks (a selection)

- (2015) The 5th World Congress and School on Universal Logic (UniLog’15), University of Istanbul, Istanbul, Turkey, 20–30 June 2015. Title: *Theorems of Tarski and Gödel’s Second Incompleteness—Computationally*.
- (2013) Frontiers in Mathematical Sciences—The Second Conference (Front’13), Sharif University of Technology, Tehran, Iran, 25–27 December 2013. Title: *Diagonalizing Out by Fixed-Points and Self-Reference*.
- (2012) Frontiers in Mathematical Sciences—A Conference in Honor of Siavash Shahshahani (Front’12), Sharif University of Technology, Tehran, Iran, 25–27 December 2012.
Title: *Axiomatizing Mathematical Theories: Multiplication*.
- (2011) The 14th Congress of Logic, Methodology and Philosophy of Science (CLMPS’2011), Nancy, France, 19–26 July 2011. Title: *Gödel’s Incompleteness Phenomenon from Computational Viewpoint*.
- (2011) The ASL European Summer Meeting, Logic Colloquium (LC’11), Barcelona, Spain, 11–16 July 2011.
Title: *On Herbrand Consistency of Bounded Arithmetics*.
- (2010) The International Workshop on Logical Approaches to Barriers in Computing and Complexity (LABCC’10), Alfried Krupp Wissenschaftskolleg, Greifswald, Germany, 17–20 February 2010.
Title: *Herbrand Consistency of $\text{I}\Delta_0$ and $\text{I}\Delta_0 + \Omega_1$* . [On a travel grant].
- (2004) The Fourth European Congress of Mathematics (4ECM), Stockholm, Sweden, 27 June–2 July 2004.
Title: *A Model-Theoretic Proof of an Incompleteness Theorem* (poster). [On a travel grant].
- (2003) The 28th International Symposium on Mathematical Foundations of Computer Science (MFCS’03), Bratislava, Slovakia, 25–29 August 2003. Title: *A Completeness Property of Wilke’s Tree Algebras*.
- (2002) The 10th International Conference on Automata and Formal Languages (AFL’02), Debrecen, Hungary, 13–18 August 2002. Title: *Tree Algebras*. (Extended Abstract).
- (2001) The (6th) Student Session of the (13th) European Summer School in Logic, Language and Information (ESSLLI’01), Helsinki, Finland, 13–24 August 2001. [On a Travel Grant].
Title: *Unprovability of Herbrand Consistency in Weak Arithmetics*.
- (2001) The ASL European Summer Meeting, Logic Colloquium (LC’01), Vienna, Austria, 6–11 August 2001.
Title: *Unprovability of Herbrand Consistency in Weak Arithmetics*. [On an ASL Student Travel Grant].

- (2000) The ASL European Summer Meeting, Logic Colloquium (LC'00), Paris, France, 23–31 July 2000. Title: *A Generalized Realizability for Constructive Arithmetics*. [On an ASL Student Travel Grant].
- (1999) The ASL European Summer Meeting, Logic Colloquium (LC'99), Utrecht, The Netherlands, 1–6 August 1999. Title: *Intuitionistic Axiomatization of End-Extension Kripke Models*. [On an ASL Travel Grant].

Other Visits (a selection)

- (2007) Post-doctoral (funded) visit to Department of Mathematics, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran, October 2006–September 2007.
- (2006) Post-doctoral (funded) visit to Research Group for Theoretical Computer Science and Logic, Institute of Computer Science and Applied Mathematics, Universität Bern, Bern, Switzerland, September 2006.
- (2006) Post-doctoral (funded) visit to Department of Philosophy and Religious Studies, Universiteit Utrecht, Utrecht, The Netherlands, April 2006.
- (2003) Participation (on a grant) at Summer School on Structural Theory of Automata, Semigroups and Universal Algebra, NATO Advanced Study Institute and Université de Montréal, Montreal, Canada, 7–18 July 2003.
- (2003) Participation (on a grant) at Summer School and Workshop on Proof Theory, Computation and Complexity, Technische Universität Dresden, Dresden, Germany, 23 June–4 July 2003.

Teaching and Supervising

Taught Courses (a selection)

- Postgraduate Courses
Advanced Computability Theory • Complexity Theory • Logical Number Theory • Logic and Computation • Recursion Theory • Proof Theory • Modal Logic • Advanced Mathematical Logic • Universal Algebra.
- Undergraduate Courses
Foundations of Mathematics • Mathematical Logic • Set Theory • Discrete Mathematics • Number Theory • Theory of Automata and Formal Languages • English for Mathematics • Calculus.

Supervised Ph.D. Theses

- Department of Mathematics, University of Tabriz, Tabriz, Iran (in Persian):
- (2019) M. ZARZA, *Axiomatizations of Subfields of the Real Numbers*.
- (2019) Z. ASSADI, *Decidability of the Multiplicative and Order Theory of Numbers*.
- (2017) P. SAFARI, *Investigating Kripke Semantics for Fuzzy Logics*.
- (2016) P. SERAJI, *Rosserizing and Effectivizing Some Proofs of the First Incompleteness Theorem*.
- Department of Mathematics, Tarbiat Modares University, Tehran, Iran (in Persian):
- (2014) A. KARIMI, *Innovative Types in Unified Diagonal Argument*.

Supervised M.Sc. Theses

- Department of Mathematics, University of Tabriz, Tabriz, Iran (in Persian):
- (2018) E. ROKNI, *Bounded Relations and their Relation to Primitive Recursive Relations*.
- (2017) Y. NOBAKHT, *Necessary and Sufficient Conditions for Undecidability of the Gödel Sentence and its Truth*.
- (2017) SH. KHALEGHI, *Standard Proofs for Gödel's Second Incompleteness Theorem*.
- (2016) M. A. TAREEGHEE, *Yablo's Paradox in Second-Order Logic*.
- (2015) V. DELARAMOGHANLOO, *Yablo's Paradox and Gödel's Incompleteness Theorems*.
- (2015) S. GHANIZADEH, *Kolmogorov Complexity and Characteristic Constants of Formal Theories of Arithmetic*.
- (2015) S. SARVARI MEHRABAD, *On Proofs of the Incompleteness Theorems Based on Berry's Paradox*.
- (2015) M. SAHAHI, *The Incompleteness Theorems of Gödel and Rosser*.
- (2014) H. SHIRZADEH, *The Shortest Definition of a Number in Peano Arithmetic*.
- (2014) P. GHAEMI, *The Surprise Examination Paradox and the Second Incompleteness Theorem*.

- (2014) SH. SADEGHI BIGHAM, *Undecidability of First-Order Logic*.
 (2013) M. MOHAMMADIAN, *Incompleteness in a General Setting*.
 (2012) S. ESMATI, *Nonstandard Models that are Definable in Peano Arithmetic*.
 (2012) F. AZARPEYVAND, *Heterologicality and Incompleteness*.
 (2012) N. JANGI BAHADOR, *An Interpolation Theorem in First-Order Logic*.
 (2010) M. ABEDINI, *A Universal Approach to Self-Referential Paradoxes, Incompleteness and Fixed Points*.
 ◦ Department of Mathematics, Institute for Advanced Studies in Basic Sciences, Zanjan, Iran (in Persian):
 (2010) F. ELMİ, *A Study of Algebraic Structures By Logical Tools*.

Supervised B.Sc. Theses

- Department of Mathematics, University of Tabriz, Tabriz, Iran (in Persian):
 (2014) S. HOSSEINKHANI, *A Mathematical Introduction to Logic*.
 (2013) A. ESMAILZADEH, *The Philosophy and Logic of Mathematics*.
 (2012) M. JAFARI, *The Foundations of Mathematical Sciences and Set Theory*.
 (2011) M. REZAYATI, *Mathematical Logic and Set Theory*.
 (2010) F. KARIMI, *The Foundations of Mathematics and Its Problems*.

Honors and Awards

Honors

- (2014) *Distinguished Reviewer* of *Zentralblatt MATH*.
 (1997) The *first rank* in the national Mathematical Olympiad of University Students (in both of the 1st and the 2nd/final rounds), Iran.
 (1997) The *first ranked graduate* of Mathematics from Sharif University of Technology, Tehran, Iran.

Awards

- Grant for participating and delivering a talk at the International Workshop on Logical Approaches to Barriers in Computing and Complexity (**LABCC'10**), Greifswald, Germany, 17–20 February 2010.
 ◦ Grant for participating and presenting a poster at the Fourth European Congress of Mathematics (**4ECM**), Stockholm, Sweden, 27 June–2 July 2004.
 ◦ Grant for participating at **Summer School on Structural Theory of Automata, Semigroups and Universal Algebra**, NATO Advanced Study Institute and Université de Montréal, Montreal, Canada, 7–18 July 2003.
 ◦ Grant for participating at **Summer School and Workshop on Proof Theory, Computation and Complexity**, Technische Universität Dresden, Dresden, Germany, 23 June–4 July 2003.
 ◦ **ASL Student Travel Grants** for participating and delivering talks at Logic Colloquiums in 1999 (Utrecht, The Netherlands), 2000 (Paris, France), and 2001 (Vienna, Austria).
 ◦ Grant for participating and delivering a talk at the (6th) Student Session of the (13th) European Summer School in Logic, Language and Information (**ESSLLI'01**), Helsinki, Finland, 13–24 August 2001.
 ◦ Grants for Ph.D. Studentship from **IMPAN** (Poland, 1999) and **TUCS** (Finland, 2000).

Miscellanea

Internet Links

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