



SAEED SALEHI

www.SaeedSalehi.ir    SaeedSalehi@IPM.ir  
root@SaeedSalehi.ir    SalehiPour@TabrizU.ac.ir

University of Tabriz  
29 Bahman Boulevard  
P.O.Box 51666-16471  
Tabriz, IRAN

## Affiliation and Positions

- *University of Tabriz*, Tabriz, Iran (since 2007). Associate Professor (since 2013).
- (Volunteer) Member of the Scientific Committee of *Tabriz Math House*, Tabriz, Iran (since 2014).
- An Editor of the *Journal of the Iranian Mathematical Society* (2019–2025).
- (Elected) Member of the Board of Directors of the *Iranian Association for Logic* (2019–2022).
- Researcher (Grantee) at the *Institute for Research in Fundamental Sciences* (IPM), Tehran, Iran (2010–2020).

## Education and Degrees

### Postgraduate Studies

- (2005) PhD in *Theoretical Computer Science*, from the 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) PhD in *Mathematical Logic*, from the 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) BSc 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* (Completeness, Decidability, and Axiomatizability).

**Computer Science:** *Computability and Complexity Theory* (and relations with Logic).

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

## Publications

### Journal Papers and Book Chapters

- (2024) Proving concurrency by loci, *International J. Math. Education in Sci. & Tech.* (forthcoming).
- (2024) On Gödel's "much weaker" assumption, *History and Philosophy of Logic* (forthcoming).
- (2024) A reunion of Gödel, Tarski, Carnap, and Rosser, *Journal of Logic and Computation* (forthcoming).
- (2022) Axiomatic (and non-axiomatic) mathematics, *Rocky Mountain Journal of Mathematics* 52(4):1157–76.
- (2022) [with Z. ASSADI]; Gödelian sentences, Rosserian sentences and truth, *J. Logic & Comput.* 32(4):729–40.
- (2022) Tarski's undefinability theorem and the diagonal lemma, *Logic Journal of the IGPL* 30(3):489–98.
- (2022) 'Sometime a paradox', now proof: Yablo is not first order, *Logic Journal of the IGPL* 30(1):71–7.
- (2021) [with K. LAJEVARDI]; There may be many arithmetical Gödel sentences, *Philosophia Math.* 29(2):278–87.
- (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. 339–48.
- (2020) Gödel's second incompleteness theorem: how it is derived and what it delivers, *The Bulletin of Symbolic Logic* 26(3-4):241–56.
- (2020) On the diagonal lemma of Gödel and Carnap, *The Bulletin of Symbolic Logic* 26(1):80–8.

- (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):225–43.
- (2019) [with K. LAJEVARDI]; [On the arithmetical truth of self-referential sentences](#), *Theoria: A Swedish Journal of Philosophy* 85(1):8–17.
- (2019) [w. Z. ASSADI]; [On decidability and axiomatizability of some ordered structures](#), *Soft Comp.* 23(11):3615–26.
- (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):971–80.
- (2018) [On axiomatizability of the multiplicative theory of numbers](#), *Fundamenta Informaticae* 159(3):279–96.
- (2018) [with P. SAFARI]; [Kripke semantics for fuzzy logics](#), *Soft Computing* 22(3):839–44.
- (2017) [with P. SERAJI]; [Gödel-Rosser’s incompleteness theorem: generalized and optimized for definable theories](#), *Journal of Logic and Computation* 27(5):1391–7.
- (2017) [with A. KARIMI]; [Diagonal arguments and fixed points](#), *Bulletin Iranian Math. Soc.* 43(5):1073–88.
- (2014) [Gödel’s incompleteness phenomenon—computationally](#), *Philosophia Scientiae* 18(3):23–37.
- (2013) [Herbrand consistency of some finite fragments of bounded arithmetical theories](#), *Archive for Mathematical Logic* 52(3-4):317–33.
- (2012) [Herbrand consistency of some arithmetical theories](#), *The Journal of Symbolic Logic* 22(3):807–27.
- (2012) [Separating bounded arithmetical theories by Herbrand consistency](#), *J. Logic & Comp.* 77(3):545–60.
- (2007) [with M. STEINBY]; [Varieties of many-sorted recognizable sets](#), *Pure Math. & Applications* 18(3-4):319–43.
- (2007) [with M. STEINBY]; [Tree algebras and varieties of tree languages](#), *Theoretical Computer Sci.* 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):451–70.
- (2005) [Polynomially bounded recursive realizability](#), *Notre Dame Journal of Formal Logic* 46(4):407–17.
- (2003) [Provably total functions of Basic Arithmetic](#), *Mathematical Logic Quarterly* 49(3):316–22.
- (2003) [with M. ARDESHIR & W. RUITENBURG]; [Intuitionistic axiomatizations for bounded extension Kripke models](#), *Annals of Pure and Applied Logic* 124(1-3):267–85.
- (2002) [Decidable formulas of intuitionistic primitive recursive arithmetic](#), *Reports on Math. Logic* 36:55–61.

### Conference Papers

- (2012) [Axiomatizing mathematical theories: multiplication](#), in: A. Kamali-Nejad (ed.), *Proceedings of Frontiers in Mathematical Sciences*, Fundamental Education Publications (Iran), pp. 165–76.
- (2012) [Computation in logic and logic in computation](#), in: B. Sadeghi-Bigham (ed.), *Proceedings of the 3<sup>rd</sup> Contemporary Issues in Computer and Information Sciences (CICIS’12)*, Brown Walker Press (USA), pp. 580–3.
- (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. 662–70.
- (2001) [Unprovability of Herbrand consistency in weak arithmetics](#), in: K. Striegnitz (ed.), *Proceedings of European Summer School in Logic, Language and Information (ESSLLI’01)*, Student Session, pp. 265–74.

### Publications in Persian

- (2019) [with P. SAFARI]; [Truth values and connectives in some non-classical logics](#), *Journal of New Researches in Mathematics* 5(19):31–6.
- (2010) [Logical number theory](#), *Newsletter of the Iranian Mathematical Society* 32(3-4):16.

### Manuscripts

- (2023) [with M. JALILVAND & B. NIKZAD]; [How \(not\) to compute the halting probability](#), SSRN:4602807.
- (2023) [On Chaitin’s heuristic principle and halting probability](#), arXiv:2310.14807.

- (2023) [with K. LAJEVARDI]; Soundness does not come for free (if at all), arXiv:2310.13422.
- (2023) [with K. LAJEVARDI]; On a fallacy concerning I-am-unprovable sentences, arXiv:2311.06568.
- (2015) Theorems of Tarski's undefinability & Gödel's 2<sup>nd</sup> 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

- *The Journal of Symbolic Logic* (JSL of the Association for Symbolic Logic).
- *The Bulletin of Symbolic Logic* (BSL of the Association for Symbolic Logic).
- *The Review of Symbolic Logic* (RSL of the Association for Symbolic Logic).
- *Annals of Pure and Applied Logic* (APAL of Elsevier).
- *Theoretical Computer Science* (TCS of Elsevier).
- *Journal of Logic and Computation* (JLC of the Oxford University Press).
- *Logic Journal of the Interest Group in Pure and Applied Logics* (IGPL of the Oxford University Press).
- *Philosophia Mathematica* (PhilMath of the Oxford University Press).
- *ACM Transactions on Computational Logic* (TOCL of the Association for Computing Machinery).
- *International Journal of Foundations of Computer Science* (IJFCS of the World Scientific).
- *Bulletin of the Iranian Mathematical Society* (BIMS of Springer).
- *Journal of Logic, Language and Information* (JLLI of Springer).
- *Discussiones Mathematicae—General Algebra and Applications* (DMGAA of the University of Zielona Góra).
- *Notre Dame Journal of Formal Logic* (NDJFL of the University of Notre Dame).
- (Proceedings of the) Conferences: (i) WoLLIC 2017, (ii) AFL 2011, (iii) ICALP 2004.
- Iran National Science Foundation (INSF).
- *Iranian Journal of Mathematical Sciences and Informatics* (IJMSI of Tarbiat Modares University).
- *Mathematical Culture and Thought* (MCT of the Iranian Mathematical Society, in Persian).

## Conferences and Visits

### Organization (a selection)

- (2023) A Member of the Scientific Committee of the 10<sup>th</sup> Annual Conference of the Iranian Association for Logic (IAL'23), Amirkabir University of Technology, Tehran, Iran, 22–23 February 2023.
- (2019) A Member of the Scientific Committee of the 6<sup>th</sup> Annual Conference of the Iranian Association for Logic (IAL'19), Shahid Beheshti University, Tehran, Iran, 21–22 January 2019.
- (2017) A Member of the Scientific Committee of the 5<sup>th</sup> Annual Conference of the Iranian Association for Logic (IAL'17), Amirkabir University of Technology, Tehran, Iran, 22–25 November 2017.
- (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 38<sup>th</sup> Annual Iranian Mathematics Conference (AIMC'38), Zanzan University, Zanzan, 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. • 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*.
- (2015) The 3rd Annual Conference of the Iranian Association for Logic (*IAL'15*), Tarbiat Modares University, Tehran, Iran, 22–23 December 2015.
  - Title: *Logic and Computation: A Constructive Look at Proofs of Gödel's Incompleteness Theorem*.
- (2014) The 10<sup>th</sup> 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 3<sup>rd</sup> International Conference on Contemporary Issues in Computer and Information Sciences (*CICIS'12*), the Institute for Advanced Studies in Basic Sciences, Zanjan, 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 5<sup>th</sup> World Congress on Universal Logic (*UniLog'15*), University of 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 14<sup>th</sup> 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  $\text{IA}_0$  and  $\text{IA}_0 + \Omega_1$* . [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 28<sup>th</sup> 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 10<sup>th</sup> International Conference on Automata and Formal Languages (*AFL'02*), Debrecen, Hungary, 13–18 August 2002. • Title: *Tree Algebras*.
- (2001) The (6<sup>th</sup>) Student Session of the (13<sup>th</sup>) European Summer School in Logic, Language and Information (*ESSLLI'01*), Helsinki, Finland, 13–24 August 2001.
  - Title: *Unprovability of Herbrand Consistency in Weak Arithmetics*. [On a Travel Grant].



- (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, 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 as Lingua Franca for Mathematics • Calculus*

#### Supervised PhD 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 MSc 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, Zanzan, Iran (in Persian):
- (2010) F. ELMI, *A Study of Algebraic Structures By Logical Tools*.

### Supervised BSc 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

#### Grant Acquisition as PI (a selection)

- [National Elites Foundation](#) (BMN), Tehran, Iran (2008–2009).
- [Iran National Science Foundation](#) (INSF), Tehran, Iran (2018).
- [Institute for Research in Fundamental Sciences](#) (IPM), Tehran, Iran (2007, 2010–2017, 2019).
- [University of Tabriz](#), Tabriz, Iran (2017–2020).

#### Honors (a selection)

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

#### Awards (a selection)

- Grant for participating at
  - \* [LABCC'10](#), Greifswald, Germany, 17–20 February 2010 (with delivering a talk).
  - \* [4ECM](#), Stockholm, Sweden, 27 June–2 July 2004 (with presenting a poster).
  - \* [SMS-NATO ASI 2003](#), Université de Montréal, Montreal, Canada, 7–18 July 2003.
  - \* [PT-Event](#), Technische Universität Dresden, Dresden, Germany, 23 June–4 July 2003.
  - \* [ESSLLI'01](#), Helsinki, Finland, 13–24 August 2001 (with delivering a talk).
- [ASL Student Travel Grants](#) for participating and *delivering talks* at LOGIC COLLOQUIUMS in 1999 (Utrecht, The Netherlands), 2000 (Paris, France), and 2001 (Vienna, Austria).
- Grants for PhD Studentship from [IMPAN](#) (Poland, 1999–2000) and [TUCS](#) (Finland, 2000–2005).

### Miscellanea

#### Some Internet Links

GoogleScholar: <a href="#">xI4on2oAAAAJ</a>	PhilPapers: <a href="#">Saeed Salehi</a>	arXiv: <a href="#">salehi_s_1</a>	DBLP: <a href="#">pid/95/520</a>
ResearchGate: <a href="#">Saeed-Salehi-2</a>	Math.Genealogy: <a href="#">93048</a>	MathSciNet: <a href="#">714784</a>	zbMATH: <a href="#">10864</a>
ORCID: <a href="#">0000-0001-6961-5749</a>	Academia: <a href="#">SaeedSalehi</a>	Scopus: <a href="#">9277111900</a>	
SemanticScholar: <a href="#">1468709567</a>	Web of Science: <a href="#">Y-3287-2019</a>		