

## Curriculum Vitae Lejla Smajlović



### PERSONAL INFORMATION

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**First name:** Lejla

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**Last name:** Smajlović

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**Date of birth:** June 25, 1974.

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**E-mail:** [Lejla.Smajlovic@efsa.unsa.ba](mailto:Lejla.Smajlovic@efsa.unsa.ba)

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**Personal Web page:** <http://efsa.unsa.ba/~lejla.smajlovic>

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**Fields of interest:** Number Theory and Analysis

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### EDUCATION BACKGROUND

Name of institution	Years attained	Qualification achieved
University of Sarajevo, Department of Mathematics	2003.	PhD in Mathematics
University of Sarajevo, Department of Mathematics	2000.	MSc in Mathematics
University of Sarajevo, Department of Mathematics	1997.	BSc in Mathematics

### PRESENT POSITION:

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**Institution:** University of Sarajevo

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**Position:** Professor

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**Address:** Trg Oslobođenja Alija Izetbegović 1

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**Postal code:** 71 000

**City:**  
Sarajevo

**Country:** B&H

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**Phone:** +387-33-27-59-28

**Fax:** +387-33-27-59-06

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**E-mail:** [Lejla.Smajlovic@efsa.unsa.ba](mailto:Lejla.Smajlovic@efsa.unsa.ba);  
[lejlas@pmf.unsa.ba](mailto:lejlas@pmf.unsa.ba)

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**Website:** [www.efsa.unsa.ba](http://www.efsa.unsa.ba)

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## ACADEMIC POSITIONS

Professor of Mathematics, University of Sarajevo, July 2013-present

Associate Professor of Mathematics, University of Sarajevo, December 2007 - July 2013

Assistant Professor of Mathematics, University of Sarajevo, September 2003 – December 2007

Senior Teaching Assistant of Mathematics, University of Sarajevo, July 2000 -September 2003

Teaching Assistant of Mathematics, University of Sarajevo, April 1997 – July 2000.

## RESEARCH INTERESTS

In general terms, my interests involve number theory following the work of Atle Selberg. I have studied analytic, algebraic and computational aspects of trace formula including properties of the Selberg zeta function, zeta and L-functions in the extended Selberg class, explicit formulas, various types of holomorphic and non-holomorphic Eisenstein series, and special properties of automorphic forms associated to arithmetic groups. In addition, my research involves aspects of spectral theory and functional analysis, primarily the types of questions motivated by trace formula and analytic number theory.

I am presently involved in several projects, each one of which has, as part of its focus, a specific problem whose publishable solution is impending.

The following is a partial list of my current collaborations.

1. Various aspects of theory of modular forms on arithmetic groups that are obtained by adding Fricke involutions to the congruence groups of a square-free level. (Joint research with J. Jorgenson and H. Then)

In the case when the genus of the groups is zero, then the groups are appearing in “monstrous moonshine”. I’m interested in algebraic properties of special values of the hauptmoduli at elliptic points on the associated Riemann surface and the properties of the extension of the field of rationals generated by those values.

In the genus one case, I’m interesting in arithmetic properties of the underlying elliptic curve, i.e. the curve given by the equation satisfied by the generators of the function field of meromorphic functions on the associated Riemann surface.

I am also interested in different types of Weyl’s law and establishing a close approximation to the smallest non-zero eigenvalue of Maass forms on such arithmetic groups.

2. Construction and meromorphic continuation of various types of non-holomorphic Eisenstein series using functional-analytic methods starting with the heat kernel and ending with the explicit construction of the wave distribution whose action on a special test function yields the Eisenstein series in question.  
(Ongoing research with J. Jorgenson)
3. Dedekind sums arising from the higher order Eisenstein series (higher order Dedekind sums).

I am interested in properties of a multiplier system arising in the analogue of the Kronecker limit formula for the Eisenstein series twisted by an absolute value of the modular symbol to an even exponent which we call the higher order Dedekind sum. In the special case of the congruence groups and the arithmetic groups obtained by adding Fricke involutions which are

of genus one I'm interested in relating the higher order Dedekind sums to periods of the underlying elliptic curve.

(Ongoing research with J. Jorgenson and C. O'Sullivan)

4. Relations equivalent to generalized Riemann hypothesis for various classes of Dirichlet series and properties of certain Dirichlet series of Bombieri-Ghosh type with periodic coefficients. (Ongoing research with A. Odzak, A.-M. Ernvall-Hytonen and K. Mazhouda).
5. Expressing the scattering determinant and the derivative of the Selberg zeta function at one in terms of the regularized determinant of an operator related to the Lax-Phillips operator on the finite volume non-compact Riemann surface. (Ongoing research with J. Jorgenson and J. Friedmann).

## SPECIFIC PROFESSIONAL EXPERIENCE

1. Associate Editor of the Journal of Number Theory.
2. Reviewer for MathSciNet and Zentralblatt MATH.
3. Expert for establishing the standards on learning achievements, evaluating the achieved results and developing the common core curricula in preprimary, primary and secondary educational levels at the Agency for Pre-Primary, Primary and Secondary Education (since 2003.)

## PUBLICATIONS IN INTERNATIONAL JOURNALS

1. A. Odžak, L. Smajlović, On the Euler-Stieltjes constants for the Rankin-Selberg L-function, to appear in *Int. J. Number Theory*.
2. J. Jorgenson, L. Smajlović, On the distribution of the derivative of Selberg's zeta function associated to a finite volume Riemann surfaces, to appear in *Nagoya J. Math.*
3. J. Jorgenson, L. Smajlović, H. Then, Certain aspects of holomorphic function theory on some genus zero arithmetic groups to appear in *LMS J. Comp. Math.*
4. K. Mazhouda, L. Smajlović, On relations equivalent to the generalized Riemann hypothesis for the Selberg class, to appear in *Funct. Approx. Commentarii Math.*
5. J. Jorgenson, A.-M. Von Pippich, L. Smajlović, On the wave representation of hyperbolic, elliptic and parabolic Eisenstein series, *Adv. Math.* **288** (2016), 887-921.
6. J. Jorgenson, L. Smajlović, H. Then, Kronecker's limit formula, holomorphic modular functions and  $q$ -expansions on certain arithmetic groups, *Exp. Math* **25** No. 3 (2016), 295-320.
7. A. Bucur, A.-M. Ernvall-Hytönen, A. Odžak, L. Smajlović, On a Li-type criterion for zero-free regions of certain Dirichlet series with real coefficients, *LMS J. Comp. Math.* **19**(1) (2016), 259-280.
8. A. Odžak, L. Smajlović, Euler-Stieltjes constants for the Rankin-Selberg  $L$ -function and weighted Selberg orthogonality, *Glasnik Mat.* **51** (71) (2016), 23-44.
9. A. Bucur, A.-M. Ernvall-Hytönen, A. Odžak, E. Roditty-Gershon, L. Smajlović, On  $\tau$ -Li coefficients for Rankin-Selberg L-functions, in: *Women in Numbers Europe: Research Directions in Number Theory*, Association for Women in Mathematics Series, Springer Verlag, 2015, 167-190.

10. A.-M. Ernvall-Hytönen, A. Odžak, L. Smajlović, M. Sušić, On the modified Li criterion for a certain class of L-functions, *J. Number Theory* **156** (2015), 340-367 .
11. J. Jorgenson, L. Smajlović, H. Then, On the distribution of eigenvalues of Maass forms for certain moonshine groups, *Math. Comp.* **83**, No. 290 (2014), 3039-3070.
12. L. Smajlović, L. Šćeta, On the remainder term in the Weyl law for cofinite Kleinian groups with finite dimensional unitary representation, *Arch. Math.(Basel)* **102** (2014), 117-126.
13. L. Smajlović, L. Šćeta, On a Tauberian theorem with the remainder term and its application to the Weyl law. *J. Math. Anal. Appl.* **401** (2013), no. 1, 317–335.
14. M. Avdispahić, J. Jorgenson, L. Smajlović, Asymptotic behavior of the Selberg zeta functions for degenerating families of hyperbolic manifolds. *Comm. Math. Phys.* **310** (2012), no. 1, 217–236.
15. A. Odžak, L. Smajlović, On interpolation functions for generalized Li coefficients in the Selberg class, *Int. J. Number Theory*, **7** (2011), no. 3, 771–792.
16. A. Odžak, L. Smajlović, On asymptotic behavior of generalized Li coefficients in the Selberg class, *J. Number Theory* **131** (2011) no. 3, 519-535.
17. A. Odžak, L. Smajlović, On the representation of H-invariants in the Selberg class. *Acta Arith.* **148** (2011), no. 2, 105–118.
18. L. Smajlović, On Li's criterion for the Riemann Hypothesis for the Selberg class. *J. Number Theory* **130** (2010), no. 4, 828—851.
19. A. Odžak, L. Smajlović, On Li's coefficients for the Rankin-Selberg L-functions. *Ramanujan J.* **21** (2010), no. 3, 303—334.
20. M. Avdispahić, L. Smajlović, On the Selberg orthogonality for automorphic L-functions. *Arch. Math. (Basel)* **94** (2010), no. 2, 147--154.
21. M. Avdispahić, L. Smajlović, On the prime number theorem for a compact Riemann surface. *Rocky Mountain J. Math.* **39** (2009), no. 6, 1837—1845.
22. M. Avdispahić, L. Smajlović, Euler constants for a Fuchsian group of the first kind. *Acta Arith.* **131** (2008), no. 2, 125--143.
23. M. Avdispahić, L. Smajlović, Explicit formula for the hyperbolic scattering determinant, *Acta Math. Sinica. Engl. Ser.*, **27** (2007), No- 5, 889-894.
24. M. Avdispahić, L. Smajlović, Explicit formulas and Euler constants on algebraic number fields, in: J. M. Rassias (ed.): *Leonhard Paul Euler. Tricentennial birthday anniversary collection. Functional equations, integral equations, differential equations and application.* *Int. J. Appl. Math. Stat.* **11** (2007) No. 7, 13-20.
25. M. Avdispahić, L. Smajlović, Functional equation in the fundamental class of functions and the type of explicit formula, *Ann.-Eur. Acad. Sci.* (2006-2007), EAS publishing house, 69-81.
26. M. Avdispahić, L. Smajlović, An explicit formula and its application to the Selberg trace formula, *Monatsh. Math.* **147**, No. 3 (2006), 183-198.
27. M. Avdispahić, L. Smajlović, On maximal operators on k-spheres in  $\mathbb{R}^n$ , *Proc. Amer. Math. Soc.* **134** (2006), No. 7, 2125-2130.
28. M. Avdispahić, L. Smajlović, A note on Weil's explicit formula, in: A. Yu. Krennikov, Z. Rakić, I. V. Volovich, *p-adic Mathematical Physics*, American Institute of Physics Conference Proceedings **826** (2006), 312-319.
29. M. Avdispahić, L. Smajlović, A new explicit formula for the fundamental class of functions, *Taiwanese J. Math.*, **10** (2006), No. 6, 1523-1538.
30. M. Avdispahić, L. Smajlović, Explicit formula for a fundamental class of functions, *Bull. Belg. Math. Soc. Simon Stevin*, **12** No. 4 (2005), 569-587.

31. M. Avdispahić, L. Smajlović,  $\phi$ -variation and Barner-Weil formula, *Math. Balkanica* **17** (2003), Fasc. 3-4, 267-289.

## PREPRINTS

1. J. Jorgenson, L. Smajlović, H. Then, The Hauptmodul at elliptic points of certain arithmetic groups.
2. J. Jorgenson, A.-M. Von Pippich, L. Smajlović, Applications of Kronecker's limit formula for elliptic Eisenstein series.
3. J. Friedman, J. Jorgenson, L. Smajlović, The determinant of the Lax-Phillips scattering operator.
4. J. Friedman, J. Jorgenson, L. Smajlović, Evaluation of central value of the automorphic scattering determinant.
5. J. Jorgenson, C. O'Sullivan, L. Smajlović, Modular Dedekind symbols associated to Fuchsian groups and higher-order Eisenstein series.
6. M. Avdispahić, L. Smajlović, On the logarithmic derivative of the Selberg zeta function.

## BOOKS (in native language)

1. A. Odžak, L. Smajlović, Kompleksna analiza, Prirodno-matematički fakultet u Sarajevu (2013).
2. L. Smajlović, Priručnik za polaganje kvalifikacionog ispita iz matematike na Ekonomskom fakultetu u Sarajevu, Ekonomski fakultet u Sarajevu, treće izdanje (2013).
3. L. Smajlović, Matematika za ekonomiste, Ekonomski fakultet u Sarajevu (2010).
4. M. Malenica, L. Smajlović, Potencija tačke u odnosu na kružnicu, inverzija i primjene, Prirodno-matematički fakultet Sarajevo (2006).
5. L. Smajlović, A. Fako, Zbirka zadataka iz Matematike (II dio), Ekonomski fakultet Sarajevo (2005).
6. M. Alić, L. Smajlović, Matematika za I razred gimnazije, Svjetlost, Sarajevo 2006.

## PAPERS IN NATIONAL JOURNALS

1. L. Smajlović, L. Šćeta, Razvojni i  $\lambda$ -razvojni model tržišta, *Zbornik radova Ekonomskog fakulteta u Sarajevu* 30 (2010), 460-485.
2. M. Malenica, L. Smajlović, D. Zubović, Primjena inverzije na rješavanje konstruktivnih zadataka, *Didaktički putokazi* 46 (2008), 38-44.
3. M. Malenica, L. Smajlović, Inverzija i homotetija, *Zbornik radova Prirodno-matematičkog fakulteta u Tuzli* 2 (2007), 120-126.
4. L. Smajlović, Neke karakteristike Brownovog kretanja i njegova primjena, *Zbornik radova Ekonomskog fakulteta u Sarajevu* 26 (2006), 143-152.
5. M. Malenica, L. Smajlović, D. Zubović, O inverziji, *Zbornik radova Prirodno-matematičkog fakulteta u Tuzli* 2 (2005), 95-111.

## **GRADUATE STUDENTS**

Mrs. A. Odžak, PhD completed in 2010

Mrs. L. Šćeta, PhD completed in 2015.

Mr. K. Bllaca, PhD completed in 2016.

Mrs. D. Zubovic, PhD thesis in progress.

I have also supervised five master thesis and five MA thesis. At the moment, I supervise one PhD thesis and three MA thesis at the Department of Mathematics, University of Sarajevo.

## **Grants awarded**

„Asimptotsko ponašanje generaliziranih Liovich koeficijenata“ („Asymptotic behavior of generalized Li coefficients“), scientific project financed by Federal Ministry of Science and Education (2014).

„Eulerove konstante za funkcije iz Selbergove klase“ („Euler constants for functions in the Selberg class“), scientific project financed by Ministry of Science and Education, Canton Sarajevo (2007).

“Poopštena varijacija i primjena na modeliranje cijena na tržištu dionica” („Generalized variation and applications to price modelling on the stock markets“), scientific project financed by Federal Ministry of Science and Education (2007).

“Škola popularne matematike: matematika u nauci i životu” („School of popular mathematics: Mathematics in science and everyday life“), financed by Sarajevo City Government (2005).

## **Teaching**

During the academic year 2015/16 I teach Complex Analysis, Complex Analysis II, Real Analysis, Introduction to Real Analysis with Applications and Mathematics for Economists for the students of the I cycle of studies and Stochastic Processes, Algebraic Number Theory and Harmonic Analysis for graduate (II cycle) students.