

## Curriculum Vitae: Dr Borhen Halouani

### Personal Details:

**Address:** King Saud University  
College of Sciences - Department of Mathematics.  
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**Citizenship:** Tunisian

**Born:** Jan.15, 1979, Akouda, Tunisia.

**Family Situation:** Married (One child: Salem).

### Education and Qualification:

**2002-2006** PhD in Mathematics at University of Littoral (ULCO), France.  
*Local Peak Sets in Weakly Pseudoconvex Boundaries in  $\mathbb{C}^n$ .*  
Achieved with Honors-distinguish on June, 30<sup>th</sup>, 2006.  
Advisor: Prof. Joachim Michel, Jury: Prof. Joachim von Below ,  
Prof. Yves Dupain, Prof. Bert Fisher, Prof. Emmanuel Mazzilli

**2001-2002** Master's: DEA in Pure Mathematics at University of Lille I, France.  
Memoir: *Complex, Almost complex, Cauchy-Riemann Manifolds & Integrability and Embedding Problems.*  
Advisor: Prof. Joachim Michel  
Jury: Prof. Pierre Débes, Prof. Pascal Honvault.

**1997-2001** Undergraduate studies:  
2000-2001: 'Maîtrise' in Mathematics at Faculty of Sciences of Monastir, Tunisia.  
1999-2000: 'Licence' in Mathematics at Faculty of Sciences of Monastir, Tunisia.  
1997-1999: 'DEUG MP' in Mathematics at Faculty of Sciences of Monastir, Tunisia.

**June 1997** Baccalaureate of Mathematics, Akouda, Tunisia.

### Teaching Experience:

**2007-Up to now** Assistant Professor at King Saud University, KSA.  
I taught Integral Calculus I & II, Discrete Mathematics, General Mathematics  
Biostatics, Probability, Differential Equations, Linear Algebra,  
Group Theory, Complex Analysis, Measure Theory, Programming C++.

**2006-2007** Teaching Assistant at School of Engineering of Monastir, Tunisia.  
I taught Probability and Statistics, Complex Analysis.

**2003-2006** Teaching at University of Littoral (ULCO), Calais, France.  
I taught Real Analysis, Linear Algebra, Probability and Statistics.

**2000-2001** CAPES (National Mathematics Teaching Competition), Tunisia.

### My research Interests:

- One and Several Complex Variables.
- $q$ -Special Functions.
- Wavelets - Fractals.
- Harmonic Analysis and Theory of Operators.

- $d$ -Orthogonal Polynomials.

### Publications:

#### Articles:

- *Meixner  $d$ -orthogonal polynomials and  $su(1, 1)$  algebra*, with Fethi Bouzaffour, submitted (April 2020).
  - *Hyponormality on a weighted Bergman space*, with Houcine Sadraoui, Mubariz Garayev and Adel Alshehri, published at Hindawi Journal of Function Spaces, (July 2020).  
<https://doi.org/10.1155/2020/8398012>
  - *Hyponormality on an annulus with a weight*, with Houcine Sadraoui published at Mathematical Methods in the Applied Sciences, (July 2020). <https://doi.org/10.1002/mma.6640>
  - *Hyponormality on an annulus with a general radial weight*, with Houcine Sadraoui published at Mathematical Methods in the Applied Sciences, (Jun 2020). <https://doi.org/10.1002/mma.6643>
  - *On a property of Toeplitz operators on Bergman space with a logarithmic weight*, with Houcine Sadraoui published at Afrika Matematika, (Nov 2019). <https://doi.org/10.1007/s13370-019-00749-1>
  - *Boundary behavior of Berezin Symbols and related results*, with Mubariz Garayev, Gürdal Yamanci and Ulas Yamancic . Published at Filomat 33:14 (Aug 2019), 4433–4439. <https://doi.org/10.2298/FIL1914433G>
  - *On the Baire generic of the  $t$ -multifractal formalism in Besov and Sobolev spaces*, with Mourad Ben Slimane, Moez Ben Abid and Ines ben Omrane published at Hindawi Journal of Function Spaces, (Aug 2019). <https://doi.org/10.1155/2019/4358261>
  - *Directional Multifractal Analysis in the  $L^p$  Setting*, with Mourad Ben Slimane, Ines Ben Omrane, Moez Ben Abid and Farouq Alshormani published at Hindawi Journal of Function Spaces, (July 2019).  
<https://doi.org/10.1155/2019/1691903>
  - *Directional Thermodynamic Formalism*, with Mourad Ben Slimane, Moez Ben Abid and Ines Ben Omrane published at Symmetry, (Jun 2019). <https://doi.org/10.3390/sym11060825>
  - *Criteria of Pointwise and Uniform directional Lipschitz Regularities on Tensor Products of Schauder Functions*, with Mourad Ben Slimane, Moez Ben Abid and Ines Ben Omrane, published at J. Math. Analysis and Applications, (Dec 2017). <https://doi.org/10.1016/j.jmaa.2017.11.061>
  - *Mixed Wavelet Leaders Multifractal Formalism in a Product of Critical Besov Spaces*, with Moez Ben Abid, Mourad Ben Slimane and Ines Ben Omrane published at Mediterr. J. Math, (Aug 2017) 14:176.  
<https://doi.org/10.1007/s00009-017-0964-0>
  - *On Wavelet and Leaders Wavelet Based Large Deviation Multifractal Formalisms for Non-Uniform Hölder Functions*, with Mourad Ben Slimane, Moez Ben Abid and Ines Ben Omrane, published at J. Fourier. Anal. Appli (Nov 2017). <https://doi.org/10.1007/s00041-017-9578-y>
  - *On the Asymptotic Expansion of the  $q$ -Dilogarithm*, with Fethi Bouzaffour published at Advances in Difference Equations, 2016. <https://doi.org/10.1186/s13662-016-0811-9>
  - *Multifractal Formalism of Oscillating Singularities for Random Wavelet Series* with Mourad Ben Slimane, published at Fractals, Vol.23 No 2, (April 2015). <https://doi.org/10.1142/S0218348X1550005X>
  - *Local Peak Sets in Weakly Pseudoconvex Boundaries in  $\mathbb{C}^n$* . Published at Annales de la faculté des sciences de Toulouse. Vol XVIII, No 3, 2009. <https://doi.org/10.5802/afst.1215>
  - *Ensembles localement pics dans les bords faiblement pseudoconvexes de  $\mathbb{C}^n$* . Published at C.R. Acad. Sci. Paris, Volume 344, issue 5, 2007. <https://doi.org/10.1016/j.crma.2007.01.016>
- Thesis:** - *Local Peak Sets in Weakly Pseudoconvex Boundaries in  $\mathbb{C}^n$* , (79 pages), 2006.  
<http://www.sudoc.fr/106008161>
- Master's:** - *Complex, Almost complex, Cauchy-Riemann Manifolds & Integrability and Embedding Problems*.(40 pages), 2002.
- Books:** - *Complex Analysis for One Complex Variable*. Published at School of Engineering of Monastir, 2007.

### Professional Development:

- Coordinator of Evaluation & accreditation committee and member of steering committee *at the department of Mathematics, (2018-2020).*
- Principal Investigator of research group entitled: *Complex Analysis, Harmonic Analysis, Number theory and operators theory Number: RG-1439-68 (2018-2020)*
- Coordinator for Math 111 (2015-2018)
- Coordinator of Community Services at the department of Mathematics, KSU. (2011-2017)
- Coordinator of Learning Management System (LMS) at the department of Mathematics, KSU.
- Member of Committee for Analysis and Topology & Geometry at the department, KSU .
- Refereeing some research papers.
- LMS project: Math 111 (done in 2016) and Math 107 (done in 2017)
- LMS project: Differential & Integral Math 200 (done in 2015).
- LMS project: General Mathematics Math 104 (done in 2014).
- LMS project: Discrete Mathematics Math 151 (done in 2013).
- Math499 Research project: Interpolation of Polynomials (Student: Talel Alasmari), KSU.
- Math499 Research project: Orthogonal Polynomials (Student: Anwar Hamdi), KSU.

### Seminars and conferences:

- Dec. 11, 2007 King Saud University, KSA.
- Mar. 19, 2007 Society of Mathematics of Tunisia (SMT).
- Dec. 4, 2006 Faculty of Sciences of Monastir, Tunisia.
- Jun. 5, 2006 Laboratory of Pure and Applied Mathematics, Calais, France.
- Mar. 24, 2006 Laboratory Paul Painlevé, Geometric Analysis, Lille, France.

### Miscellany:

**Computer skills:** I program in the following languages: Latex, C++, Scientific Workplace, Mathematica.

**Languages:** I am fluent in English, French and Arabic(mother tongue).

### References are available on request:

#### **Dr. Tariq A. Al-Fadhel**

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#### **Prof. Joachim Michel**

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