



Benford's Law for fraud detection. Foundations, methods and applications

Dates: 10-12 July 2019

Where: *Conference Location:* Stresa, Italy, Hotel La Palma, <https://www.hlapalma.it/en/>

Local organizers premises: Ispra site of the Joint Research Centre of the European Commission, Italy:
<https://ec.europa.eu/jrc/en/about/jrc-site/ispra>

Scientific program

Wednesday, July 10th 2019

9:00 – 9:30 *Registration*

9:30 – 10:00 *Opening* – Chair: Matthew King

Vladimir Šucha: Welcome address from the Director-General of the JRC and the organisers

10:00 – 10:30 *Position talk* – Chair: Winfried Kleinegris

Marco De Andreis: Scientists and practitioners: the JRC and Italy's customs on fraud detection

<https://www.adm.gov.it/portale/-/de-andreis-mar-1>

10:30 – 11:00 *Coffee break*

11:00 – 12:00 *Keynote talk* – Chair: Arno Berger

Theodore P. Hill: Benford's law and detection of anomalies in data

<http://people.math.gatech.edu/~hill/>

12:00 – 12:10 *Short break*

12:10 – 13:10 *Keynote talk* – Chair: Steven J. Miller

Mark J. Nigrini: A review of the forensic accounting Benford applications and future directions

https://en.wikipedia.org/wiki/Mark_Nigrini

13:10 – 15:00 *Lunch*

15:00 – 15:30 *Position talk* - Chair: Domenico Perrotta

Winfried Kleinegris: Big data, Benford & the Allegory of the Cave: strengths and weaknesses of profiling for the purpose of preventing and detecting fraud

<https://ec.europa.eu/anti-fraud/>

15:30 – 16:30 *Keynote talk* – Chair: Tim Verdonck

Marco Riani: Robust modern multivariate data analysis

<http://www.riani.it/>

16:30 – 16:40 *Short break*

- 16:40 – 17:10 *Invited talk* – Chair: Spyros Arsenis
Domenico Perrotta: SITAF-ST: Statistics and Information Technologies for Anti-Fraud, Security and Trade at the JRC
<https://ec.europa.eu/jrc/en/person/domenico-perrotta>
- 17:10 – 17:40 *Invited talk* – Chair: Charles Macmillan
Andrea Cerioli: Benford's law and the detection of frauds in international trade
<https://en.unipr.it/ugov/person/18251>
- 17:40 – 18:10 *Invited talk* - Chair: Marco De Andreis
Caroline Gasparro, Francesca Torti: Detecting manipulations in accounting data of EU organizations
- 18:10 – 18:30 *Contributed talks A* – Chair: Don Lemons
Guojun Fang: Several common probability distributions obey Benford's law
- 18:10 – 18:30 *Contributed talks B* – Chair: Emmanuele Sordini
Joseph R. Mason: Property appraisals and loan performance

Thursday, July 11th 2019

- 9:30 – 10:30 *Keynote Talk* – Chair: Mark J. Nigrini
Steven J. Miller: Benford's law, or, Why the IRS and others care about Number Theory
https://web.williams.edu/Mathematics/sjmiller/public_html/williams/welcome.html
- 10:30 – 10:35 *Short break*
- 10:35 – 11:35 *Keynote talk* – Chair: Domenico Perrotta
Alex E. Kossovsky: The general law of relative quantities and digital development forensics
<https://www.worldscientific.com/worldscibooks/10.1142/9089>
- 11:35 – 12:00 *Coffee break*
- 12:00 – 12:40 *Invited talk* – Chair: Peter Filzmoser
Tim Verdonck: Instance-dependent cost-sensitive logistic model for detecting transfer fraud
<https://wis.kuleuven.be/stat/members/00071962>
- 12:40 – 13:10 *Invited talk* - Chair: Andrea Cerioli
Luis Angel Garcia-Escudero: A robust clustering approach to fraud detection
<http://www.eio.uva.es/infor/personas/langel.html>
- 13:10 – 15:00 *Lunch*
- 15:00 – 15:30 *Invited talk* – Chair: Alex E. Kossovsky
Don Lemons: Thermodynamics of Benford's Law
<https://scholar.google.com/citations?user=Mru46wwAAAAJ&hl=en>
- 15:30 – 16:00 *Invited talk* – Chair: Marco Riani
Claudio Agostinelli: Local tube depth and segmentation of international trade
<http://www.science.unitn.it/~claudio/about/index.html>

- 16:00 – 16:40 *Contributed talks C* – Chair: Andrea Cerasa
Sebastiaan Höppner: An approach for dealing with imbalanced data in fraud detection
Zoran Jasak: Average, minimal and maximal significands
- 16:00 – 16:55 *Contributed talks D* – Chair: Robert Stadler
Francesco Porro: The TC data 360 dataset and the Benford's law
Tobias Scholz, Björn Golnick: Application of Benford's law in the e-Audit Tool „SRP – Summary Risk Profiling” of the German Tax Administration – more than 11 years of experience in the field
Pier Luigi Marchini: Empirical evidence of financial statement manipulation in going concern and bankrupted companies
- 16:55 – 17:00 *Short break*
- 17:00 – 18:45 *Tutorial for law enforcement agents by the JRC Staff*
Breakout sessions and meetings of small working groups

Friday, July 12th 2019

- 9:30 – 10:30 *Keynote talk* – Chair: Theodore P. Hill
Arno Berger: Digits and dynamics – exploring Benford's law through dynamical systems
<https://www.math.ualberta.ca/~aberger/>
- 10:30 – 11:00 *Invited talk* – Chair: Lucio Barabesi
Rita Giuliano: Benford's law between number theory and probability
<http://people.dm.unipi.it/giuliano/>
- 11:00 – 11:30 *Coffee break*
- 11:30 – 12:10 *Invited talk* - Chair: Luis Angel Garcia-Escudero
Peter Filzmoser: Fraud detection in the digital music industry
<http://file.statistik.tuwien.ac.at/filz/>
- 12:10 – 12:40 *Invited talk* - Chair: Francesca Greselin
Agustin Mayo-Iscar: Denoising and trimming for improved cluster solutions with applications to customs frauds
<http://www.eio.uva.es/infor/personas/agustin.html>
- 12:40 – 13:10 *Invited talk* – Chair: Francesca Torti
Robert Stadler – Andrea Cerasa: Use of Benford's law in the case selection of ex-post clearance customs audits in Austria
- 13:10 – 13:30 *Closing*
Mark J. Nigrini – Domenico Perrotta
- 13:30 – 15:00 *Lunch*