IMPA, Rio de Janeiro, Brazil - November 29th to December 5th,2019

mathematics & finance: RiO 14th Edition Research in Options

CERTIFICATE

We hereby certify that, ***Ana Cascon***, **Omega Analysis**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**New Statistics from the Geometry of Omega Functions**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg FGV SCHOOL OF APPLIED MATHEMATICS FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico CAPES Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th,2019

mathematics & finance: RiO Research in Options

14th Edition

CERTIFICATE

We hereby certify that, ***Bourgey Florian***, **École Polytechnique**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Meta-model of a large credit risk portfolio in the Gaussian copula model**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa

LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg

FGV | SCHOOL OF APPLIED MATHEMATICS

FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro

CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

CAPES

Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th, 2019

mathematics & finance: RiO 14th Edition Research in Options

CERTIFICATE

We hereby certify that, ***Bruno M. P. M. Oliveira***, **Universidade do Porto**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Prices when random pairs of participants can make imperfect trades**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa

LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg

FGV | SCHOOL OF APPLIED MATHEMATICS

FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro

CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

CAPES

Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th, 2019

mathematics & finance: RiO 14th Edition Research in Options

CERTIFICATE

We hereby certify that, ***David Evangelista da Silveira Junior***, **Fundação Getúlio Vargas**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Mean-Field Games of Optimal Traders vs. a Market Maker**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg FGV | SCHOOL OF APPLIED MATHEMATICS FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico CAPES Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th,2019

mathematics & finance:

14th Edition

RiO

Research in Options

CERTIFICATE

We hereby certify that, ***Eben Mare***, **University of Pretoria**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Benchmarks, Bullies and (re)Balancing**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa

LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg

FGV | SCHOOL OF APPLIED MATHEMATICS

FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro

CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

CAPES

Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th,2019

mathematics & finance: RiO 14th Edition Research in Options

CERTIFICATE

We hereby certify that, ***Fernando A L Aiube***, **Universidade do Estado do Rio de Janeiro**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Estimation of VIX futures through Gaussian factor models**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg FGV SCHOOL OF APPLIED MATHEMATICS FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico CAPES Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th,2019

mathematics & finance: RiO 14th Edition Research in Options

CERTIFICATE

We hereby certify that, ***Gyorgy Varga***, **Fce Consultoria**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Liquidity Premium and Buyback Auctions**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg FGV SCHOOL OF APPLIED MATHEMATICS FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico CAPES Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th, 2019

mathematics & finance: RiO Research in Options — 14th Edition

CERTIFICATE

We hereby certify that, ***Jose Afonso Faias***, **Universidade Católica Portuguesa**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Does left jump variance predict the cross-section of equity returns?**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa

LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg

FGV | SCHOOL OF APPLIED MATHEMATICS

FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro

CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico

CAPES

Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29^{th} to December 5^{th},2019

mathematics & finance: RiO Research in Options

14th Edition

CERTIFICATE

We hereby certify that, ***Luca De Gennaro Aquino***, **Grenoble Ecole de Management**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**Bounds on Multi-asset Derivatives via Neural Networks**".

Rio de Janeiro, December 5^{th}, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg FGV SCHOOL OF APPLIED MATHEMATICS FAPERJ CNPq CAPES Chaire Risques Financiers FdR

IMPA, Rio de Janeiro, Brazil - November 29th to December 5th,2019

mathematics & finance: RiO Research in Options

14th Edition

CERTIFICATE

We hereby certify that, ***Vinícius Viana Luiz Albani***, **Universidade Federal de Santa Catarina**, participated in the Mathematics & Finance: Research in Options 2019, held at IMPA, Rio de Janeiro, November 29 – December 05, 2019 and presented the following contributed talk: "**A Splitting Strategy for the Calibration of Jump-Diffusion Models**".

Rio de Janeiro, December 5th, 2019.

Jorge P. Zubelli
Organizing Committee

ORGANIZING

impa LAMCA laboratório de análise e modelagem matemática em ciências aplicadas

SUPPORT

Bloomberg FGV SCHOOL OF APPLIED MATHEMATICS FAPERJ Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro CNPq Conselho Nacional de Desenvolvimento Científico e Tecnológico CAPES Chaire Risques Financiers FdR