CALL FOR PAPERS

Apart from plenary and semi-plenary sessions, the scientific program of the ICA 2018 will include up to 11 parallel sessions with about 100 slots for the presentation of submitted papers. Each parallel session will last 90 or 120 minutes and contain a number of 30- to 45-minute talks. Related topics will be grouped together in one parallel session. Through the Call for Papers, ICA 2018 offers the opportunity to be part of the scientific program and to contribute to one of those sessions.

ABSTRACT SUBMISSION PROCEDURE

The Scientific Committee welcomes

• innovative research from academia (actuarial science, finance, insurance, risk management, etc.),
• papers written by national or international task forces and working parties as well as
• papers by practitioners describing results related to practice or open problems that might benefit from further scientific analysis.

For this purpose, the Scientific Committee has identified a wide range of main topics and subtopics. The main topics for the ICA 2018 include theoretical and practical issues, innovative approaches and day-to-day problems. Authors who are interested to give a presentation at the ICA 2018 are encouraged to submit an abstract using the ICA 2018 online submission tool accessible via the ICA 2018 website, from 1 February 2017 and no later than 31 July 2017.

ABSTRACT SUBMISSION REQUIREMENTS

Submissions must meet the following requirements:

• Authors have to submit an abstract of 200-300 words.
• This has to be accompanied by
  • a description of the practical value of the submitted proposal
  • and an overview of related literature or other sources.
• The submission must be written in English.

Authors of accepted abstracts have to provide a presentation, a brief bio and a portrait. Moreover, they have to agree to the distribution of the submitted material (abstract, presentation, etc.) within the scope of the ICA 2018.

GENERAL TIMELINE

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>1 February 2017</td>
<td>Start of Call for Papers</td>
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<tr>
<td>31 July 2017</td>
<td>Submission deadline</td>
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| November 2017      | Notification of authors on final decision for
                    | general scientific program onsite and online |
|                    | ICA 2018 Best Paper Awards                |
|                    | IAA Sections Best Paper Awards            |
| 19 November 2017   | Publication of provisional scientific program |
The following list shows the main topics for the ICA 2018 related to the different special-interest sections. Apart from section-specific topics, the scientific program includes also joint sessions covering cross-section topics. Please note that the list of main topics and sub-topics for the ICA 2018 is not exclusive. Candidates may also submit their own proposals for appropriate topics and sub-topics that are not contained in the list.

### AFIR/ERM

**Risk Management**
- Risk strategy, risk appetite, limit systems
- Performance measurement
- Risk management in extreme scenarios and implications in a macro-economic context (e.g. pro-cyclical effects)
- Governance, communication and influence of risk management on business decisions
- Three years of ORSA experience

**Risk Modelling and Valuation**
- Pricing, managing and modelling of guarantees
- Approximation techniques (replicating portfolios, curve fitting, LSMC) and their application to the projection of own funds and capital requirements
- Valuation of assets in incomplete markets
- Modelling and assessment of alternative investments
- Economic/interest-rate models: modelling, valuation and implications for business decisions
- Validation of internal models, technical provisions, and model uncertainty
- Architecture of internal models

**Investment Management and Asset-Liability Management**
- Investment and portfolio strategies under changes in the market environment and customer behavior
- Impact of demographic development on investment decisions
- Optimal hedging strategies and the efficient use of derivatives for long-term risks and commitments

**Solvency and Regulatory Environment**
- Latest developments concerning Solvency II
- Impact of Solvency II on managing assets & liabilities
- Managing economic and local regulatory demands
- Standard model vs. internal model
- International capital standards (ICS)

**Capital Management**
- Risk transfer (internal/external)
- Optimal reinsurance structures
- Index-linked securities, investment alternatives that improve capital efficiency
- Reorganization of group structures

**Customer Behavior**
- Global and individual drivers of customer behavior
- Impact of changes in social, political and financial environment on (savings) behavior
- Mathematical and statistical methods to describe, model and quantify customer behavior
- Methods and solutions to influence customer behavior

**Emerging Risks**
- New developments (economic, political, business, socio-economic differences, globalization) and resulting emerging risks
- Mathematical and statistical methods to model and quantify emerging risks
- Cyber risk, climate change, autonomous driving, and aging society
- Financial networks, assessment and modelling of complex interdependencies of risks in distressed situations
- Calibration and validation of models given sparse historic data
- Application of models from other industries (e.g. chemical, pharmacy, nuclear, biology) to insurance

**Solutions to Biometric, Mortality and Longevity Risks**
- Digitalization, big data, and other trends in pricing, modelling of underwriting risks, preferred underwriting
- Securitization, reinsurance and capital markets
- New sources of mortality improvement (or deterioration) and their implication for the insurance sector
**ASTIN**

**Data Science and Big Data Analytics**
- Claims settlement
- Telematics
- Building risks especially with regards to geolocation
- Rating based on pattern recognition
- Early warning (App)
- Connecting big data to actuarial problems
- Applications to climate change and Nat-Cat
- Fraud detection

**Discount Rate**
- Damage inflation vs. negative discount rate
- Impact of inflation on product design and pricing

**Experience with Solvency II**
- Effects of the actuarial function on management control, with special emphasis on their implementation at national level
- Effects of Solvency II on legacy business in general and the run-off market in particular
- The role of the actuary
- CERA

**Product Innovation**
- Application for insurance and execution using photos or film
- Rating via film
- Peer-to-peer insurance, sharing economy, crowd insurance
- Decollectivisation
- Reinsurance business model: possibilities and benefits
- How does the relevant client “tick”, how do we model his needs? (connection to psychology)
- Potential impact of self-driving cars on the insurance market

**Claims Reserving**
- Dynamic run-off uncertainty
- Granular data and individual reserving
- Market consistent valuation of liabilities

**Aspects of Insurance Supervision**
- Insurance supervision with regard to operational risk (OpRisk)

**Reinsurance**
- Optimal risk transfer and reinsurance structures
- Innovations in reinsurance and new designs in securitization

**Methods**
- Alternative pricing methods: what comes after GLM?
- What can we learn (and copy) from other industries (Google, eBay etc.)?
- Non-classical reserving methods, e.g. single damage reserving analogue to calculation
- Classical methods in times of big data
- Comparison of methods that are not accessible to a direct IT solution

**Statistical Learning**
- Causality in statistical learning, machine learning
- Transfer of methods from other areas (e.g. biology, statistics, medicine, pricing for retailers)

**Emerging Risks**
- Cyber risks
- Climate change
- Autonomous driving

**Claims Reserving**
- Dynamic run-off uncertainty
- Granular data and individual reserving
- Market consistent valuation of liabilities

**Progress in Simulation**
- Efficient simulation of rare events
- Sequential Monte Carlo methods
- Support vector machines

**New Insights from old Methods**
- Bornhuetter-Ferguson principle
- Credibility theory (see publication by the task force “Tarifierung”)
MAIN TOPICS

HEALTH

Actuarial Pricing and Reserving for Health Insurance
- New calculation models and principles of health insurance
- Pricing updates: long-term business, short-term business, international comparisons
- Predictive modelling in health insurance
- Long-term care insurance: premium and reserve calculation, profit analysis
- Underwriting in health insurance

Health Insurance Product Design
- Packaging health- and lifetime-related products
- Micro-health insurance
- Medical analytics in healthcare pricing and product design
- Should healthcare benefits be extended to minimize policy exclusions?

Demographic Transition and Health Insurance
- Long-term demographic trends in mortality rates, morbidity rates and medical expenses
- Pandemics
- Funding old-age health needs via personal wealth
- Sustainable financing of health insurance in private and social systems
- Future challenges: how to create value in a changing environment and what can actuaries do?

Impact of Data Availability, Digitalization and Medical Developments on Health
- Impact of global medical or pharmaceutical developments on pricing, longevity or costs
- Genetics and genomic drugs – does this mean the end of risk pooling?
- Impact of activity- or lifestyle-based data on pricing
- Disease management
- Long-term care insurance: statistical data and models for disablement and extra mortality of disabled people
- Customer behavior and new common diseases

Regulatory and Social Aspects for Health
- Solvency II and capital requirements
- Private medical insurance vs. public health care, international comparisons
- Premiums and provisions in private health insurance: statutory rules vs. actuarial requirements
- Unisex tariffs in health insurance

Please also note the topics for joint sessions of the program tracks LIFE/HEALTH
LIFE

Actuarial Pricing and Reserving for Life Insurance
- Risk classification, underwriting and price discrimination (unisex, etc.)
- Pricing of options and guarantees
- Development of underwriting techniques
- Completion of void spaces: best estimates for risks without data
- Efficient insolvency detection: accounting standards vs. actuarial evaluation
- Does rational customer behavior exist?
- Life risk mitigation and control at individual and portfolio level
- Coping with long-term-guarantees in a low interest rate environment

Life Insurance Product Design
- Product innovation in life insurance
- Guarantee designs for the low interest rate environment
- Changes of customer preferences: regional and global trends
- The impact of random and uncertain environments on product design

Demographic Transition, Emerging Risks and Life Insurance
- The impact of megatrends on life insurance risk: migration, urbanization, climate
- New models for predicting longevity/mortality improvements
- Demographic change and its impact on LTC and occupational disability insurance
- The impact of data availability and digitalization on life: marketing, underwriting, claims and actuarial modelling
- Mathematical models for emerging risks and their impact on life insurance

Regulatory and Social Aspects of Life Insurance
- Trends in regulation: non-discrimination, products and other issues
- The role of the actuary in regulation
- Review of Solvency II
- Customer protection and Solvency II paradigms: goal achieved?
- Policyholder communication: needs and demands
- Private vs. public solutions for insuring life risks

Please also note the topics for joint sessions of the program tracks
LIFE/HEALTH and LIFE/PENSION
MAIN TOPICS

PENSIONS

Old-Age Provision in a Low Interest Environment
• Asset-backed vs. pay-as-you-go systems in a low interest environment and decreasing populations
• Possibilities to generate revenues in a continuing low interest period
• Protection for long-term saving: inflation, real and nominal interest rates

Intergenerational Fairness in Occupational Pension Schemes
• Guarantees and inter-generational fairness in connection with pension promises, looking for solutions for both old and new pension deals

New Approaches for Occupational Pension Schemes
• Development of pension solutions in a dynamic scenario/dynamic models
• Flexible design of capital market guarantees that are appropriate and adequate for beneficiaries
• New forms of guarantee similar to defined ambition or collective DC. What experience have you had in your country?
• Development of successful/alternative concepts for the decumulation phase; how can benefits be made more attractive?

Aspects of Occupational Pension Schemes with regard to Staffing Policy and Social Policy
• What are employers’ motives for setting up an occupational pension scheme?
• How far is the sponsoring employer liable for his defined-benefit occupational pension promises? – An international comparison

The Solvency Question for IORPs
• Own funds for IORPs with respect to the specific characteristics of occupational pensions. Do we need a Common Framework or HBS? What can better suited solutions look like?
• Protection mechanisms in occupational pensions. How much security do we need in occupational pensions? An international comparison

Pension Systems for International Organizations
• United Nations Joint Staff Pension Fund and similar institutions

Management Control
• Econometric modelling of capital markets applied to long-term management control in IORPs

Life Model
• Investigation of different approaches to calculate a sufficient income over a life-span (“life model”), especially to avoid poverty in old age and to finance education and academic training

Retirement Choices
• Early retirement
• Flexible retirement
• Late retirement
• Partial retirement

Employer Accounting for Pensions
• Current developments on IAS19 and US GAAP – Comparison with other local standards
• Insurance accounting vs. employer accounting under IFRS

Pension Benefit Statements and Pension Tracking Services
• TTYPE – National and international pension tracking services for all pension providers
• Pension benefit statements – How can different types of pension scheme be made comparable?

Please also note the topics for joint sessions of the program tracks LIFE/PENSION
MAIN TOPICS

JOINT SESSIONS

HEALTH and LIFE as well as LIFE and PENSIONS have proposed topics for joint sessions, which cover fields that are of common interest. These sessions are organized jointly aiming at a reciprocal exchange of knowledge and experiences, but also submissions for these topics that cover specific aspects related to HEALTH, LIFE and/or PENSIONS only are highly welcome.

JOINT SESSIONS LIFE & PENSIONS

Design of Life Insurance and Pension Products
- New guarantee designs for the low interest rate environment
- Changes in customer preference: regional and global trends
- Product innovation in life insurance and pensions
- Designing and pricing annuities and LTC products in a stochastic environment

Demographic Change and Development of Life Risks
- New models for predicting longevity/mortality improvements
- Emerging risks and their impact on life insurance and pensions

JOINT SESSIONS HEALTH & LIFE

Product Design in Life Insurance and Health Insurance
- Combining health and life insurance products
- Long-term care insurance
- Product design in a changing scenario (in the presence of non-diversifiable risk of change, e.g. from ageing, demographic trends, morbidity trends and global medical developments)
- Microinsurance in life and health

Impact of Data Availability and Digitalization on Life Insurance and Health Insurance
- Definition and role of big data
- Use of big data in risk classification, underwriting and pricing
  - predictive modelling
  - making use of activity or lifestyle based data
  - individualization vs. collectivization in modern insurance of persons
- Genetic research and developments – the impact in modern insurance of persons
- Data protection: restrictions on access to data

Demographic Change and Development of Life Risks and Health Risks
- Impact from megatrends on biometrical risks: migration, urbanization, climate change, new common diseases
- Demographic change and its impact on long-term care and disability insurance
- Models for predicting trends in mortality rates, morbidity rates and medical expenses
- Mortality and morbidity at very old ages

Regulatory Aspects of Life Insurance and Health Insurance
- Solvency II: status quo and future perspectives of regulation
- Private vs. public solutions for insuring life risks and health risks
  - international comparisons
  - statutory rules vs. actuarial requirements
MAIN TOPICS

IACA (CONSULTING)

External Drivers
• Future of insurance regulation
• Mass migration: How changes in demographics affect risks
• International actuarial standards
• Capital market expectations in Europe
• Consulting actuaries dealing with Solvency II – lessons learnt

Current Issues
• Starting insurance companies
• Outsourcing of actuarial services, pitfalls for providers
• Mergers and acquisitions
• Diversity and Multi-disciplinary teams
• Fin-Tech: Bitcoin, Blockchain, Algorithms, Robotics
• Volatility and Terrorism

Emerging Opportunities
• Non-traditional consulting jobs
• Educating clients about ERM
• Industrialization of actuarial processes and its impact on consulting
• Environmental consulting
• What will be the next big topic for consultants in Europe after Solvency II has been successfully implemented?
• Actuaries in banking: learning from South Africa and Australia
• The challenges and opportunities for actuarial consultancies in Africa
• Doing business in Africa: considerations for pricing work
• New product development – a task for consultants?

Data Analytics: The New Consulting Frontier
• Digitalization – can we play a role?
• Actuaries and sustainable development goals
• Actuaries working in new professional fields that are concerned with rapidly developing technologies
• The challenges and opportunities of performing data analytics in new territories
• Considerations when entering a new industry to perform data analytics

The Role of the Consulting Actuary
• Actuaries working in interdisciplinary teams with professionals outside the actuarial profession
• Outsourced calculating machine or more?
• The social impact of actuarial work
• The actuarial role in setting regulation (for all sectors)

Please also note the topics for joint sessions of the program tracks IACA/Professionalism
MAIN TOPICS

PROFESSIONALISM

- Actuaries in “Non-standard” Working Environments (cross-border, outside financial industry, in other political systems, with different mathematical backgrounds)
- Managing Conflicts of Interest
- Serving the Public Interest – what does it mean for the individual actuary, what does it mean for the professional association?
- The Role of the Actuary – in particular, statutory roles and regulatory key functions (joint sessions with other special-interest sections)

JOINT SESSIONS IACA AND PROFESSIONALISM

IACA and Professionalism have proposed topics for joint sessions which cover fields that are of common interest. These sessions are organized jointly by IACA and Professionalism aiming at a reciprocal exchange of knowledge and experiences. Not only submissions related to both sections but also submissions that cover specific aspects related to IACA and/or Professionalism only are highly welcome.

- Presentation Skills and Visual Communication
- Data Security and Cyber Risks
- Project Management
- Actuarial Audits
- Document Retention Policies
- Expert Witness Work

EDUCATION

Education deals with different current and future topics on (continuing) qualification of actuaries. There will be a broad and interesting program, even though Education is not part of the Call for Papers.

CONTACT ICA 2018

Please send your questions regarding the Call for Papers as well as the ICA 2018 Scientific Program to callforpapers@ica2018.org