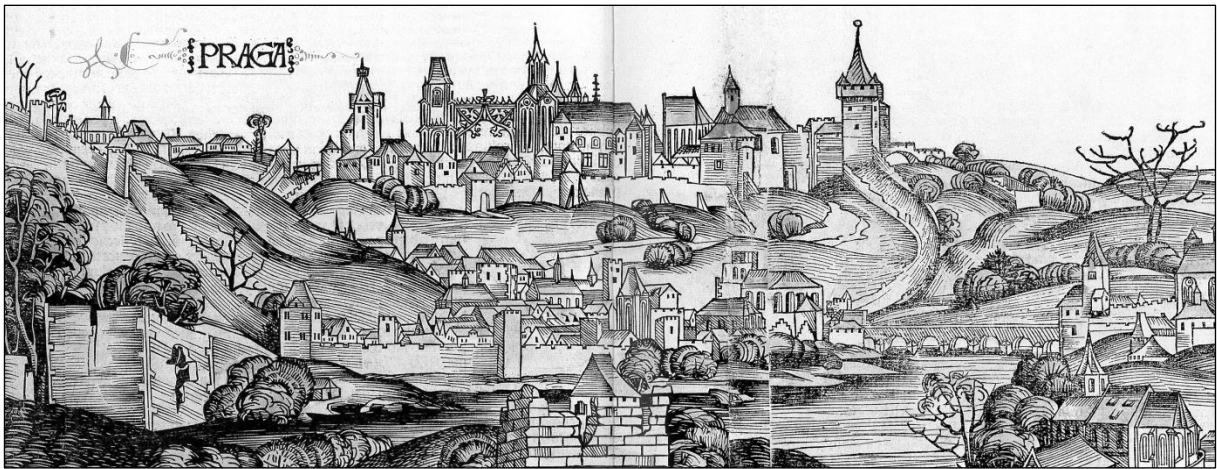


International multidisciplinary conference series

Frontiers of Quantum and Mesoscopic Thermodynamics (FQMT)

<https://fqmt.fzu.cz/>



Major topics

Non-equilibrium phenomena

Quantum statistical physics

Foundations of quantum physics

Quantum optics

Astrophysics and cosmology

Mesoscopic and biological systems

Cold atoms and molecules

The conferences are organized by

Institute of Physics of the Czech Academy of Sciences

FQMT Conference Series Overview

FQMT conferences form a series of successful conferences (FQMT'04, FQMT'08, FQMT'11, FQMT'13, FQMT'15, FQMT'17, FQMT'19, and FQMT'21) which are traditionally held in Prague. Follow-up to the eight previous conferences will be FQMT'22 to be held in the summer 2022. The title of the conference is traditional and reflects main topics of early FQMT conferences. The contributions from the previous conferences have been published in Physica E (vol. 29, issues 1-2, 2005, and vol. 43, issue 3, 2010), Physica Scripta (vol. T151, 2012, and vol. T165, 2015), Fortschritte der Physik (Progress of Physics), vol. 65, 2017, and European Physical Journal Special Topics (vol. 227, issues 15-16, 2019 and vol. 230, issue 4, 2021).

For the details of the conference programs and the history of the FQMT conferences see the www pages: <https://fqmt.fzu.cz/>.

The upcoming conference FQMT'22, <https://fqmt.fzu.cz/22/>, will be again held in Prague, from 31 July (Sunday) – 6 August (Saturday) 2022.

The FQMT conference series is organized by

- Institute of Physics, the Czech Academy of Sciences

The FQMT conference series is supported by

- Institute of Physics, the Czech Academy of Sciences
- and several other institutions from the Czech Republic and abroad

Scope of the Conferences

The main goal of the conference series is to contribute to a better understanding of the behavior of quantum systems, generally out of equilibrium. To reach this aim we also need to improve our knowledge of systems in equilibrium and steady state situations. The conferences thus address foundations of quantum physics, quantum many body physics, statistical physics, and thermodynamics relying on the theoretical and experimental methods of condensed matter physics and quantum optics. The systems considered are mainly on the order of mesoscopic (nanoscale) size, and include those of both natural and artificial origin. Special attention is given to non-equilibrium quantum systems, physics of quantum information and manifestation of quantum effects in biological systems. Subjects from astrophysics, gravitation or cosmology related to the above scope are also included.

Selected Topics of the Past Conferences

- Non-equilibrium quantum phenomena
- Foundations of quantum physics, quantum measurement, entanglement
- Dissipation, dephasing, noise and decoherence
- Many body physics, quantum field theory
- Quantum statistical physics and thermodynamics
- Quantum optics
- Quantum simulations, physics of quantum information
- Topological states of quantum matter, quantum phase transitions
- Macroscopic quantum behavior, cold atoms and molecules
- Mesoscopic, nano-electromechanical and nano-optical systems
- Biological systems, molecular motors and quantum biology
- Cosmology, gravitation and astrophysics

Multidisciplinary Character of the Conferences

The aim of FQMT conferences is to create a bridge between the fields of non-equilibrium statistical physics, quantum many body physics, foundations of quantum physics, quantum thermodynamics, quantum optics, physics of quantum information, astrophysics, condensed matter physics, physics of mesoscopic systems, chemical physics and biophysics.

The tradition of the FQMT series is to bring together a unique combination of both young and experienced scientists across a disciplinary spectrum covering the above mentioned topics. The interdisciplinary character of the conferences is supported by the choice of key speakers who, apart from their specializations, are not only able to report specific results within their fields, but are also able to discuss the state of the art of their fields from the standpoint of a broader perspective of overlap with other fields. It is an objective to gather important scientists from overlapping branches of physics who can mutually benefit from the exchange of different views and ideas, experiences from studies of many different systems and various theoretical and experimental approaches to the study of current problems in physics. This arrangement of the scientific program contributes to the formulation of challenging questions and problems, as well as their related answers that are nowadays essential to improve the understanding of the foundations of quantum physics, many body physics, quantum statistical physics of systems far from equilibrium, the physics of nanoscale and biological systems. It further motivates new collaboration and intensive discussions between experts from differing fields of physics, chemistry, and biology.

Public Lectures

The tradition of FQMT conferences is to include into their programs public lectures which present interesting topics in the form attractive for both the conference participants and general audience. These lectures are held at special venues and accompanied by concerts.

Musical, Art and Social Programs

An encompassing social program of every FQMT conference includes the number of social events and tours in order that participants may enjoy not only physics but also Prague during the conference, sometimes in a way, which is hardly available to common visitors of Prague. Hence for accompanying persons this is an opportunity for a very rare and memorable visit to this city.

The conference participants and their partners have an exceptional opportunity to spend some time in the Wallenstein Palace. They can enjoy the large Baroque garden of the Wallenstein Palace with its beautiful Sala Terrena for discussions during the evening welcome party. A guided tour is organized through the huge baroque complex of the Wallenstein Palace. This is a unique experience by itself since it is difficult to see all these places under ordinary circumstances.

In keeping with the multidisciplinary character of the scientific program, the cultural richness of the city of Prague the FQMT conferences feature concerts performed by world-class musicians, held at outstanding venues of the city. The list of these places includes, e.g., the St. Simon and Juda Church (seat of the Prague Symphonic orchestra FOK), Dvořák's Hall of the Rudolfinum (the seat of the Czech Philharmonic Orchestra and famous by concerts of Prague Spring Festival), the gothic Cathedral of St. Vitus at Prague Castle (one of the symbols of the Czech lands), the baroque St. Margaret Church at the Břevnov Monastery, and the Strahov Monastery with its famous library.

The scientific, the fine arts, and the musical programs are intended as a complement to one another, where scientists, historians of the arts and musicians are encouraged to mingle and share their knowledge and experience. The encompassing social programs include tours and a number of very special events unavailable to the general tourist.

Public Lectures at the FQMT Conferences - Overview

The previous public lectures were presented by the following speakers:

FQMT'04

Anthony Leggett: Does the everyday world really obey quantum mechanics?

FQMT'08

Georgy Shlyapnikov: Novel physics with ultracold fermions

Marlan Scully: The demon and the quantum: From thermodynamics to quantum mechanics and beyond

Raymond Chiao: The Big Bang and the Cosmic Gravitational-wave Background (CGB): Using quantum mechanics to detect the first ripples in the Universe

FQMT'11

Martin Rees: From Big Bang to Biospheres

Claude Cohen-Tannoudji: Laser manipulation of atoms

FQMT'13

Serge Haroche: Juggling with photons in a box to explore the quantum world

Pavel Kroupa: How astronomers define our world view

FQMT'15

Gerard 't Hooft: The quantum deep down

Marlan Scully: The photon sheds light on the quantum

FQMT'17

John Pendry: Metamaterials and the science of invisibility

Anton Zeilinger: From quantum puzzles to quantum information technology

FQMT'19

William Phillips: Time, Einstein and the coolest stuff in the universe

Rainer Weiss: The beginnings of gravitational wave astronomy

Wolfgang Ketterle: Cooling close to absolute zero temperature: A recipe for discoveries

FQMT'21

The conference was held online only and no public lectures were included.

Musical Program - Overview

All the above public lectures were followed by concerts of classical or jazz music. These concerts and other musical events of the FQMT were held in outstanding venues of Prague, namely the St. Vitus Cathedral of the Prague Castle, Dvořák's Hall of the famous Rudolfinum Concert House, National House of Vinohrady, Baroque Wallenstein Palace, Břevnov Monastery, Strahov Monastery, and Sts. Simon and Juda Church. The concerts were performed by world-class musicians from Prague and abroad.

Brief description of concerts during individual FQMT conferences:

FQMT'04

- Classical concert: Main Hall of the Wallenstein Palace, Monday July 26, 2004, Snítel Quartet L. Janáček, A. Dvořák

FQMT'08

- Classical concert – Chamber music: St. Šimon and Juda Church - Wednesday July 30, 2008, J.B. Pergolesi, J.D. Zelenka, G.F. Handel, V. Kramář, A. Dvořák, J. Ježek, and G. Faure
- Jazz concert: Cinema Hall of the Pyramida Hotel, Thursday July 31, 2008 International jazz band
- Classical concert – Organ music: Břevnov Monastery – Friday August 1, 2008, J.S. Bach, Herman of Reichenau, Hildegarda of Bingen, J. Pachelbel, P. Eben

FQMT'11

- Classical concert – Chamber music: St. Šimon and Juda Church - Tuesday July 26, 2011 J. Clarke, J.S. Bach, P.J. Vejvanovský, F.X. Brixi, D. Buxtehude, G. Faure, J. Somary, Y. Goyzman, J. Weinberger, M. Bruch, Jewish Songs, M. Nyman, D. Shostakovich, G. Mahler, Klezmer music
- Jazz concert: Cinema Hall of the Pyramida Hotel, Wednesday July 27, 2011 Original Prague Syncopated Orchestra
- Classical concert – Chamber and organ music, Dvořák's Hall of Rudolfinum, Thursday July 28, 2011 L. Boëllmann, G.F. Handel, H.I.F. Biber, M. Duruflé, J.Ch. Pepusch, Y. Waldman, J. Suk, J. Ježek
- Classical concert – Organ, brass, and Gregorian chant music: St. Vitus Cathedral, Friday July 29, 2011 J. Kšica, J. Suk, J. Burghauser, Hildegarda of Bingen, M. Praetorius, St. Thomas Aquinas, J.S. Bach, O. Messiaen, G.F. Handel

FQMT'13

- Classical concert – Chamber and organ music, Dvořák's Hall of Rudolfinum, Tuesday July 30, 2013 Ch. M. Widor, J. Clarke, J.S. Bach, G.F. Handel, Y. Waldman, V. Trojan, A. Tansman, T. Albinoni, A. Dvořák, M. Reger, J. Ježek, G. Gershwin, H. Arlen, C. François, J. Revaux, P. Anka, J. Kšica
- Jazz concert: Cinema Hall of the Pyramida Hotel, Wednesday July 31, 2013 Original Prague Syncopated Orchestra
- Classical concert – Chamber music: St. Šimon and Juda Church, Thursday August 1, 2013 P.J. Vejvanovský, J. Stanley, G.P. Telemann, F.W. Zachow. J.D. Zelenka, M.A. Charpentier, L. van Beethoven, V.J. Tomášek, V. Hálek, Z. Lukáš, E. Bozza, Jewish Songs, E. Bloch, J. Engel, P. Ben Haim

- Classical concert – Organ, brass, and Gregorian chant music: St. Vitus Cathedral, Friday, August 2, 2013
J. Pezelius, M. Reger, P. Vejvanovský, Hildegarda of Bingen, J.S. Bach, H.I.F. Biber, F.X. Thuri, J. Bodin de Boismortier, F. Weiss, J. Kšica

FQMT'15

- Classical concert – Chamber music: St. Šimon and Juda Church, Tuesday July 28, 2015
J. Kšica, G.F. Handel, M. Erdenko, P.A. Levi, M. Weinberg, K. Husa, J. Hlaváč, F. Liszt, D. Milhaud, A. Corelli
- Classical concert – Chamber and organ music, Dvořák's Hall of Rudolfinum, Wednesday July 29, 2015,
J. Kšica, J.S. Bach, J.B. Loeillet, C.M. Widor, G.F. Handel, V. Trojan, P. Eben, F. Chopin, A. Dvořák, G. Gershwin
- Classical concert – Organ, brass, and chamber music: St. Vitus Cathedral, Thursday, July 30, 2015
C. Franck, W.A. Mozart, J.B. Pergolesi, J. Burghauser, J.S. Bach, H.I.F. Biber, J. Clarke, M.R. de Lalande
- Classical concert – Organ and chamber music: Břevnov Monastery, Friday, July 31, 2015
J.S. Bach, G.F. Handel, G. Cavazzoni, J. Massenet, Hildegarda of Bingen

FQMT'17

- Classical concert – Chamber music: National House of Vinohrady, Tuesday July 11, 2017
J. Kšica, M.A. Charpentier, T. Albinoni, J. D. Zelenka, I. Séquardt, J. Haydn, W.A. Mozart, J. Brahms, A. Dvořák, F. Drdla, F. Chopin, D. Milhaud, G. Gershwin, J. Hlaváč
- Classical concert – Chamber and organ music, Dvořák's Hall of Rudolfinum, Wednesday July 12, 2017
J. Kšica, J.S. Bach, J. Clarke, G.F. Handel, H. Purcell, A. Vivaldi, A. Dvořák, B.A. Wiedermann, A. Rubinstein, E. Garner, V. Trojan, R. Quilter, L. Bernstein, J. Hlaváč
- Classical concert – Organ and chamber music: St. Vitus Cathedral, Thursday, July 13, 2017
M. Reger, J.S. Bach, W.A. Mozart, K. Stamic, J. L. Dusík, F. Geminiani, B. Smetana, J. Trneček, G. P. Telemann, A. Corelli, F. Liszt
- Classical concert – Organ and chamber music: Břevnov Monastery, Friday, July 14, 2017
P. J. Vejvanovský, G. F. Handel, E. Morricone, J. S. Bach, A. Dvořák

FQMT'19

- Classical concert – Chamber music: Pyramida Hotel, Tuesday July 16, 2019
G. F. Handel, F. X. Thuri, J. J. Bodin de Boismortier, P. J. Vejvanovský, A. Dvořák, E. Morricone, H. Arlen, W. J. Hisaishi, J. Kern
- Classical concert – Chamber music: National House of Vinohrady, Wednesday July 17, 2019
F. Liszt, B. Martinů, V. Novák, A. Marcello, A. Vivaldi, J. S. Bach, P. J. Vejvanovský, J.-J. Mouret
- Classical concert – Organ and chamber music: St. Vitus Cathedral, Thursday, July 18, 2019
M. Reger, J. P. E. Martini, F. Schubert, A. Corelli, C. Franck, T. Albinoni, D. Buxtehude, A. Khachaturian, A. Dvořák, J. Kšica
- Classical concert – Organ and chamber music: Strahov Monastery, Friday, July 19, 2019
J. S. Bach, P. J. Vejvanovský, A. Dvořák, F. X. Thuri, G. Frescobaldi, E. Morricone, C. Gounod, G. F. Handel
Anniversary of the Moon landing: Apollo 11 event – jazz and piano music

FQMT'21

- On-line concert of classical music and jazz-inspired music: Václav Trojan's studio, Tuesday, July 20, 2021
V. J. Tomášek, F. Liszt, B. Martinů, J. Ježek,

Online: <https://youtu.be/4fxeShELN4M>

- Classical concert – Organ and chamber music: St. Vitus Cathedral, Thursday, July 22, 2021
C. Franck, A. Dvořák, G.F. Handel, E. Garner, T. Albinoni, F. Mendelson-Bartoldi, J. Kšica
Online: <https://www.katedrala.tv/detail/208>

The following musicians performed at the above concerts:

Ars Instrumentalis Pragensis: Luboš Hucek (bassoon), Josef Kšica (organ, harpsichord, piano), Pavel Nejtek (double-bass), Liběna Séquardtová (oboe), Ivan Séquardt (oboe, horn)

Prague Castle Trumpeters: Petr Cibulka, Tomáš Hrbáček, František Svejkský, Jan Verner (trumpets), Martin Homolka, Zdeněk Thuma, Josef Trnka (trombones), Rostislav Pavlík (tuba), Miroslav Turek (kettle-drums)

Snítíl Quartet: Roman Hranička, Matěj Polášek (violins), Barbora Veisová (viola), Šimon Veis (cello)

Gregorian Chant Singers: Jan Baťa, Pavla Bušová, Zbyněk Šír, Radim Vondráček, Eva Zbytovská

Original Prague Syncopated Orchestra: Pavel Klikar (trumpet), Ladislav Kokeš (trumpet, violin), Jan Šimůnek (violin), Tomáš Černý, Tomáš Jiráček (clarinet, saxophone), Vojtěch Pospíšil, Jakub Šnýdl (clarinet), Matěj Černý (double bass), Zbyněk Dobrohuška (banjo), Antonín Dlapa, Antonín Šturma (guitar), Jiří Gilík (piano), Alice Bauer, Adéla Zejfartová (vocal)

International jazz band: Al Hermann (trombone), Bob Montgomery (trumpet), František Uhlíř (double-bass), David Vrobel (saxophone), Adam Tvrdý (guitar), Jaromír Helešic (drums), Jiří Hlaváč (clarinet), Tomáš Víšek (piano)

The Prague Brass Soloists: Miroslav Kejmar (trumpet, flugelhorn) Marek Vajo (trumpet, piccolo trumpet) Daniela Roubíčková (French horn), Jiří Novotný (trombone) Karel Kučera (bass trombone) Karel Malimánek (tube)

Praga Camerata: Pavel Hůla (violin) Lucie Hůlová (violin) Jan Marek (violin) Josef Vychytil (violin) Dagmar Vrtová (violin) Radek Trupl (viola) Martin Sedlák (cello) Ondřej Merecký (double bass)

Jiří Hlaváč (clarinet), Luboš Hucek (bassoon), Josef Kšica (organ, harpsichord, piano), Přemysl Kšica (organ), Pavla Bušová-Kšicová (mezzosoprano), Tomáš Jindra (bass), Jan Kvapil (violin), Pavel Nejtek (double-bass), Ivan Sequardt (oboe, horn), Liběna Sequardtová (oboe), Jan Thuri (oboe), Tomáš Víšek (piano), Jindra Nečasová Nardelli (piano), Marek Zvolánek (trumpet), Václav Eichler (clarinet, tarogato), Miroslav Kejmar (trumpet), František Svejkský (trumpet), Zdeněk Šedivý (trumpet), Yuval Waldman (violin), Iva Fleischhansová-Butler (violin), Jiří Lukeš (accordion), Kristina Šváblová (quitar), Yasuko Tanaka (trumpet), Jan Fišer (trumpet), Martin Misár (trumpet), Hana Müllerová (harp), Jakub Hrubý (bass)