14th International Conference on Quasicrystals – ICQ14
26–31 May 2019, Kranjska Gora, Slovenia

Program

Sunday 26th May

17:00–19:00  Registration
19:00  Welcome party
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Monday 27th May

8:50–9:00  Opening

Session 1  Chairperson: Yasushi Ishii
9:00–9:30  Andrew J. Archer (invited)
"Signatures of incipient quasicrystal formation in liquid state and features that enhance quasicrystal stability"
9:30–10:00  Güven Kurtuldu (invited)
"Quasicrystal-induced nucleation mechanism in undercooled liquids"
10:00–10:20  Ilya Galanov (contributed)
"On self-assembly of aperiodic tilings"
10:20–10:40  Marek Mihalkovič (contributed)
"Zero-temperature stability of icosahedral quasicrystals from first principles"
10:40–11:10  Coffee break

Session 1  Chairperson: Jean-Marie Dubois
11:10–11:40  Koichi Kitahara (invited)
"A quantum chemical scheme to explain the magic electron count in aluminium-transition-metal icosahedral quasicrystals"
11:40–12:10  Joyce Pham (invited)
"From quasicrystals to crystals with interpenetrating icosahedra in Ca-Au-Al: In-situ variable-temperature transformation"
12:10–12:30  Keiichi Edagawa (contributed)
"Growth mechanism of quasicrystals"
12:30–12:50  Franc Zupanič (contributed)
"Improving heat resistance of Al-Mn-Cu alloys by quasicrystalline precipitates"
12:50–14:30  Lunch

Session 2  Chairperson: Anuradha Jagannathan
14:30–15:00  Nobuhisa Fujita (invited)
"Canonical-cell geometry: a renewed perspective"
15:00–15:20  **Janusz Wolny** (contributed)
*From a single slit to periodic, modulated, and quasiperiodic crystals - a new approach to the diffraction analysis of aperiodic systems*

15:20–15:40  **Michael Widom** (contributed)
*Spontaneous formation of thermodynamically stable Al-Cu-Fe icosahedral quasicrystal from realistic atomistic simulations*

15:40–16:00  **Pavel Kalugin** (contributed)
*R robust minimal matching rules for quasicrystals*

16:00–16:30  **Coffee break**

**Session 2**  Chairperson: **Janusz Wolny**

16:30–17:00  **Noriaki Sato** (invited)
*Strong electron correlation effects in Yb- and Ce-based quasicrystals and approximant crystals*

17:00–17:20  **Radoslaw Strzalka** (contributed)
*New corrections for phasons and multiple scattering in d-AlCuRh*

17:20–17:40  **Hiroyuki Takakura** (contributed)
*Structure description of icosahedral quasicrystals*

17:40–18:00  **Kotoba Toyonaga** (contributed)
*The atomic structure of the Al-Cu-Ru icosahedral quasicrystal*

18:00–19:00  **Dinner**

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**Tuesday 28th May**

**Session 3**  Chairperson: **Marko Žnidarič**

9:00–9:30  **Uwe Grimm** (invited)
*Diffraction of a model set with complex windows*

9:30–10:00  **Priya Subramanian** (invited)
*Spatially localized quasicrystalline structures*

10:00–10:20  **Shelomo Ben-Abraham** (contributed)
*Multidimensional Golay-Rudin-Shapiro structures*

10:20–10:40  **Reinhard Lück** (contributed)
*Quasiperiodic tilings in hyperbolic space*

10:40–11:10  **Coffee break**

**Session 3**  Chairperson: **Uwe Grimm**

11:10–11:40  **Nicolas Macé** (invited)
*Electrons on a Fibonacci chain at high temperature*

11:40–12:10  **Marko Žnidarič** (invited)
*Interaction instability of localization in quasiperiodic systems*

12:10–12:30  **Petr Ambrož** (contributed)
*Description of Voronoi tiles in quasicrystals with octagonal symmetry*

12:30–12:50  **Rima Ajlouni** (contributed)
*Quasi-periodic diffusers for architectural acoustics*
12:50–14:30 Lunch

**Session 4**  
Chairperson: **Émilie Gaudry**  
14:30–15:00 **Jean-Noël Fuchs** (invited)  
*Landau levels broadening in quasicrystals and hyperuniformity*

15:00–15:20 **Helmut Mehrer** (contributed)  
*Diffusion in quasicrystals*

15:20–15:40 **Anuradha Jagannathan** (contributed)  
*Induced superconductivity in a 1D quasicrystal coupled to a superconductor*

15:40–16:00 **Marc de Boissieu** (contributed)  
*Phonon lifetime and lattice thermal conductivity of the i-AlPdMn icosahedral quasicrystal*

16:00–16:30 Coffee break

**Session 4**  
Chairperson: **Marc de Boissieu**  
16:30–17:00 (Jean-Marie Dubois prize) **Alan Goldman**  
*Magnetism in quasicrystals: Outlook and challenges*

17:00–17:20 **Cesar Pay Gomez** (contributed)  
*Structural modifications of Gd-Au-Si quasicrystal approximants*

17:20–17:40 **Jaeyong Kim** (contributed)  
*Hydrogen storage and transport properties of TiZrNi quasicrystals under high pressure*

17:40–18:00 **Takanori Sugimoto** (contributed)  
*Magnetic orders induced by the RKKY interaction in Tsai-type quasicrystalline approximants*

18:00–19:00 Dinner

19:00–21:00 Poster session 1

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**Wednesday 29th May**

**Session 4**  
Chairperson: **Julian Ledieu**  
9:00–9:30 **Bertrand Toudic** (invited)  
*Nuclear magnetic resonance contribution to the understanding of the structure, the dynamics and the phase transitions of aperiodic crystals*

9:30–10:00 **Ryuji Tamura** (contributed)  
*Magnetism of Tsai-type approximants*

10:00–10:20 **Hans-Rainer Trebin** (contributed)  
*Brownian motion and Edagawa phasons*

10:20–10:40 **Ana Smontara** (contributed)  
*Electrical and thermal properties of Fe_{1.35}Ge*

10:40–11:10 Coffee break
Session 5
Chairperson: Wolf Widdra
11:10–11:40 Hem Raj Sharma (invited)
Thin film growth on lower symmetry quasicrystal surfaces: Fibonacci square tiling to quasicrystalline nanoclusters
11:40–12:10 Émilie Gaudry (invited)
Complex intermetallics with cluster-based bulk structures: factors governing their surface structures and properties
12:10–12:30 Stefan Förster (contributed)
Occupied and unoccupied electronic structure of the BaTiO$_3$-derived oxide quasicrystal
12:30–12:50 Ron Lifshitz (contributed)
Thermodynamic stability of quasicrystals: From fluid dynamics to soft condensed matter

12:50–14:00 Lunch

14:00 Excursion and gala dinner on the way

Thursday 30th May

Session 6
Chairperson: Ron Lifshitz
(Esther Belin-Ferré memorial) Vincent Fournée
Structure of the low-index surfaces of the Al$_5$Fe$_2$ intermetallic compound
9:30–10:00 Tomonari Dotera (invited)
Metallic-mean quasicrystals: Sequences of quasicrystals that approach crystals
10:00–10:20 Michael Schmiedeberg (contributed)
Quasicrystals composed of patchy colloids
10:20–10:40 Samuel Savitz (contributed)
Self-assembly of body-centered icosahedral cluster quasicrystals

10:40–11:10 Coffee break

Session 7
Chairperson: Primož Ziherl
11:10–11:40 Yishay Manassen (invited)
Single spin magnetic resonance
11:40–12:10 Jean-Marie Dubois (contributed)
Amorphous Al-Ce-Cu-Fe alloys: Glass formation and properties
12:10–12:30 Nicolino Lo Gullo (contributed)
Emergence of anomalous dynamics from the underlying singular continuous spectrum in interacting many-body systems
12:30–12:50 Slavko Žižek
TEM news at JEOL

12:50–14:30 Lunch
**Young Researchers’ Session**  Chairperson: Hans-Rainer Trebin

14:30–14:45  **Farid Labib** (YRS oral)
*Synthetization, stability and orientation characterization of the quasicrystal, 2/1 and 1/1 approximants in Cd-Mg-RE (RE = Tm, Er, Ho, Dy, Tb, Gd, Sm, Y) systems*

14:45–15:00  **Seyyedmehdi Hosseini** (YRS oral)
*An investigation on the formation of AlNiCo nano-quasicrystalline phases during mechanical alloying*

15:00–15:15  **Yutaka Iwasaki** (YRS oral)
*Experimental realization of a semiconducting quasicrystalline approximant in Al–Si–Ru system by band engineering*

15:15–15:30  **Jhong-Ren Huang** (YRS oral)
*Preparations and properties of nano-structured AlₓO / i-AlCuFe as quasicrystalline thermoelectric composites*

15:30–15:45  **Sebastian Schenk** (YRS oral)
*Two-dimensional oxide quasicrystals in physical and internal space*

15:45–16:00  **Shintaro Suzuki** (YRS oral)
*Composition dependence of the magnetic properties of the Tsai-type Au–Ga–Ce 1/I approximant*

16:00–16:30  Coffee break

**Session 8**  Chairperson: Hae Jin Kim

16:30–17:00  **Chuang Dong** (contributed)
*Abrasive properties of quasicrystal abrasives on soft metal surfaces and induced passivation enhancement effects on stainless steels*

17:00–17:20  **Alok Singh** (contributed)
*Development of wear-resistant coating of quasicrystal on aluminium alloys by high-pressure torsion at room temperature*

17:20–17:40  **Boštjan Markoli** (contributed)
*Can quasicrystalline alloys be of any use?*

17:40–18:00  **Jan Mazáč** (contributed)
*Linear mappings preserving pentagonal quasicrystal*

18:00–19:00  Dinner

19:00–21:00  Poster session 2

19:00  IAB meeting

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**Friday 31st May**

**Session 9**  Chairperson: Ryuji Tamura

9:00–9:30  **Silke Paschen** (invited)
*Rattling modes for better thermoelectrics?*

9:30–10:00  **Yuri Grin** (contributed)
*Known complex intermetallic compounds, why revisited?*
10:00–10:20  **Yuri Prots** (contributed)
The crystal structure of Al$_{2.75}$Ir revisited

10:20–10:40  **Partha Pratim Jana** (contributed)
Crystal structures of two 2x2x2 superstructure of gamma-brass related phases in ternary Ir-Cd-Cu system

10:40–11:10  Coffee break

**Session 9**  Chairperson: **Silke Paschen**

11:10–11:40  **Julian Ledieu** (contributed)
High entropy alloy surfaces: an introduction with the FeCrCoMnNi system

11:40–12:10  **Primož Koželj** (contributed)
Excellent magnetic softness in the FeCoNiPdCu high-entropy alloy and its nanostructural origin

12:10–12:30  **Mitja Krnel** (contributed)
Magnetism of the Cu-Gd-Ca »push-pull« intermetallic compound

12:30–12:50  Closing, Best Poster Award

12:50  Lunch

Afternoon: departure of participants

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Posters:

P1-1  **Tonica Bončina**
Color etching of aluminium alloys with quasicrystalline phases

P1-2  **Pascal Boulet**
Single crystal growth, crystal structure and surface characterisation of the binary phase Al$_{45}$Cr$_7$

P1-3  **Girma H. Gebresenbut**
Single crystal growth, structure determination and magnetic behaviour of RE-Au-Si quasicrystal approximants (RE = Ho, Tb)

P1-4  **Blaž Leskovar**
Improved quasicrystalline-forming ability of an Al-Mn-Si-based alloy

P1-5  **Iztok Naglič**
Composition, average metallic radius and valence electron concentration of Al-Mn-based metastable quasicrystals

P1-6  **Tsunetomo Yamada**
Formation of intermediate valence icosahedral quasicrystal in Au-Sn-Yb system
P2-1 **Ireneusz Buganski**  
A real space structure refinement of i-ZnMgTm

P2-2 **Takanobu Hiroto**  
Structural study on two approximant phases in Ga-Pd-Tb alloy

P2-3 **Joichiro Nakakura**  
Aperiodic tilings derived from the Ammann-Beenker tiling

P2-4 **Tsukasa Taguchi**  
Direct observation of local atomic structure in two types of Au-Ge-Yb 1/1 approximants

P2-5 **Michael Widom**  
Atomic and electronic structure of the Al-Cu-Fe icosahedral quasicrystal from realistic atomistic simulations

P2-6 **Yeong-Gi So**  
Direct imaging of planar defects in a Tsai-type 1/1 approximant

P4-1 **Yeong-Gi So**  
Formation and magnetic properties of the Ga-Pd-Tb 2/1 approximant

P4-2 **Ikuzo Kanazawa**  
Analyzing by two-level system and conduction mechanism of icosahedral quasicrystals CdYb and CdMgYb

P4-3 **Ming-Sheng Leu**  
An investigation of the microstructure and physical properties of laser metal deposit Al-Cu-Fe alloy

P4-4 **Azusa Motouri**  
Structure and magnetic properties of the Au-Ga-Ce 1/1 approximant

P4-5 **Shohei Yoshida**  
Synthesis and magnetic properties of the Au-Ga-Eu approximants

P5-1 **Dominic Burnie**  
Bias-dependency and $C_{60}$ growth on the 2-fold surface of the i-Ag-In-Yb quasicrystal

P5-2 **Marek Mihalkovič**  
Thick layer of Sn on i-Al-Pd-Mn: a quasicrystal clathrate

P5-3 **Wolf Widdra**  
Surface X-ray diffraction analysis of the BaTiO$_3$-derived oxide quasicrystal
P6-1 Johannes Hielscher

Phasonic diffusion and hyperspace self-confinement of decagonal quasicrystals

P6-2 Benedikt Hartl

On the possible emergence of quasi-crystalline structures in a Wigner bilayer system

P6-3 Joanna Śmietańska

Structural aspects of modulated Hyp-1 - PR-10 protein from St. John’s wort

P8-1 Te-Chang Tsai

Al-Cu-Fe quasicrystal enhanced non-stick layer

P9-1 Tomaž Apih

Fast field cycling relaxation study of hydrogen dynamics in partially quasicrystalline Zr_{69.5}Cu_{12}Ni_{11}Al_{7.5}

P9-2 Ivona Černičková

Isothermal section of Al-Pd-Co phase diagram at 1020 °C

P9-3 Libor Ďuriška

Corrosion behavior of as-solidified Al-Pd-Co alloys

P9-4 Darja Gačnik

Determination of physical properties of a FeCoNiPdCu high-entropy alloy and comparison to electrical steel

P9-5 Andreja Jelen

Microstructure and magnetic properties of a single-crystalline FeCoCrMnAl high-entropy alloy

P9-6 Monika Kušter

A new ternary Laves phase in the Al-Cr-Sc system

P9-7 Janez Lužnik

Disordered ferromagnetic state in the Ce-Gd-Tb-Dy-Ho hexagonal high-entropy alloy

P9-8 Samiran Misra

Atomic ordering of two neighbouring transition metals - Cu and Zn from binary CuZn to ternary Cu_{3}ZnSb

P9-9 Pavol Priputen

Phase evolution in Al-Co-Cu-Fe-Ni based high-entropy alloys

P9-10 Sivaprasad Ghanta

A new descendant of the γ-brass family in the zinc rich Ni-Zn-In system
P9-11 Stanislav Vrtnik

The effect of thermal annealing on superconductivity in the Ta-Nb-Hf-Zr-Ti high-entropy alloy system