CMQM 2023 Abstract Submission Categories

1.0 Topological materials:

1.1 Electronic structure of topological materials
1.2 Topological insulators
1.3 Dirac and Weyl semimetals
1.4 Defects in topological materials
1.5 Strong electronic correlations in topological materials (see also 5.9)
1.6 Quantum Hall effect (integer and fractional).

2.0 Semiconductors, insulators, and dielectrics:

2.1 Materials: synthesis, processing, and defects
2.2 Thermodynamic and transport properties
2.3 Optical properties, light-to-electrical conversion, and optical spectroscopic measurements (see also 14.1)
2.4 Electronic structure (bulk and defects)
2.5 Magnetic semiconductors
2.6 Ballistic transport
2.7 Wide band gap materials (see also 14.3).

3.0 Superconductivity:

3.1 Materials: synthesis, processing, and basic properties
3.2 Electronic structure of the superconducting gap and of superconducting materials
3.3 Theory, including phenomenological models and microscopic mechanisms
3.4 Vortices and vortex states of matter
3.5 Spin properties (neutron scattering, NMR, NQR, etc.)
3.6 Tunnelling phenomena
3.7 Josephson effects and proximity effects
3.8 Superconductivity and competing or intertwined phases (see also 4.4, 5.3)
3.9 Confined superconductivity: mesoscale and nanoscale effects, and 1D and 2D superconductivity
3.10 Superconductivity for energy applications (see also 14.5)
3.11 Devices (see also 10.3).

4.0 Magnetism:

4.1 Materials: synthesis, processing, and basic properties
4.2 Frustrated magnetism; spin ice; and spin liquids
4.3 Spin-dependent transport; spintronics
4.4 Magnetic materials and magnetic structure: bulk magnetic structure, disordered magnets, spin density waves, etc
4.5 Mesoscopic magnetic structures: skyrmions, domain walls, etc
4.6 Dynamics: magnetisation and spin dynamics, spin waves, etc
4.7 Magnetic heterostructures and magnetic devices.

5.0 Metals and strongly correlated electron systems:

5.1 Materials: synthesis, processing, and basic properties
5.2 Non-correlated metals; spin-orbit coupling
5.3 Non-superconducting electronic orders: charge density waves, nematicity, etc. (see also 3.8, 4.4)
5.4 Correlated metals: Kondo coupling, Hund's coupling, coulomb repulsion, etc.
5.5 Thermodynamic and transport properties
5.6 Quantum criticality
5.7 Heavy fermions
5.8 Organic correlated electron compounds
5.9 Strong electronic correlations in topological materials.

6.0 Quantum fluids, including helium-3 and helium-4

7.0 Complex structured materials, including graphene, superlattices, and metamaterials:

- 7.1 Materials: synthesis, processing, and basic properties
- 7.2 Van der Waals heterostructures
- 7.3 Graphene
- 7.4 Nanostructures (see also 11.5)
- 7.5 Superlattices
- 7.6 Metamaterials.

8.0 Surfaces, interfaces, and thin films:

- 8.1 Materials: synthesis, processing, and basic properties
- 8.2 Electronic and lattice properties
- 8.3 Structure and morphology.

9.0 Nonequilibrium quantum physics and devices:

- 9.1 Driven quantum phases and driven ordered states
- 9.2 Heat transport in quantum systems
- 9.3 Quantum devices: junctions, resonators, SQUIDs, qubits, etc. (see also 3.11)
- 9.4 Light-matter interaction.

10.0 Statistical and nonlinear physics:

- 10.1 Glassy systems
- 10.2 Soft condensed matter physics
- 10.3 Granular systems
- 10.4 Friction, fracture, and adhesion in soft materials.

11.0 Chemical physics:

- 11.1 Electronic structure theory
- 11.2 Polymers and soft matter
- 11.3 Surfaces, interfaces, and materials
- 11.4 Plasmonics and excitonics
- 11.5 Nanomaterials (see also 7.4)
- 11.6 Liquids, glasses, and crystals.

12.0 Atomic, molecular, and optical physics:

- 12.1 Cold atom analogues of condensed matter physics
- 12.2 Bose-Einstein condensates, matter optics, atomic interferometry, and nonlinear waves.

13.0 Instrumentation and measurements:

- 13.1 Microscopy, including scanned probe
- 13.2 Optics and optical techniques, including ultrafast spectroscopy and laser science
- 13.3 Neutrons and x-rays
- 13.4 Sensors and transducers
- 13.5 Instrumentation and techniques for extreme conditions, including pressure and extreme temperatures
- 13.6 Other instrumentation and measurement science.

14.0 Materials for energy:

- 14.1 Photovoltaics (see also 2.3)
- 14.2 Thermal energy conversion
- 14.3 Wide bandgap materials and devices for energy applications (see also 2.7)
- 14.4 Materials for energy storage: batteries, capacitors, hydrogen storage, etc.
- 14.5 Superconductivity for energy applications (see also 3.10)
- 14.6 Other materials for energy applications.