

QUARKS ONLINE WORKSHOPS-2021

“Quantum Gravity and Cosmology”

(dedicated to A.D. Sakharov’s centennial)

online, June 4 — 8, 2021.

Program

Moscow, 2021

We use Moscow time (GMT+3). Talk times (30+15 min) include 30 minutes for presentations and 15 min for discussions and possible technical issues.

Friday, June 4

Morning Session. 10:45 Moscow Time

Chairman: *Neil Turok (U. of Edinburgh)*

1. Andrei Barvinsky (Lebedev Inst. RAS, Moscow)
Opening remarks — 15 min.
2. Alexei Starobinsky (Landau Inst. RAS, Moscow)
The mixed R^2 -Higgs inflationary model — 30+15 min.
3. Roger Penrose (Oxford U.)
Conformal cyclic cosmology: why quantum gravity does not resolve the space-time singularity issue — 30+15 min.
4. Kostas Skenderis (U. of Southampton)
Holographic cosmology and the resolution of the initial singularity — 30+15 min.

Lunch. 13:15-14:30 Moscow Time

Afternoon Session. 14:30 Moscow Time

Chairman: *Dmitry Gal'tsov (Lomonosov Moscow State U.)*

1. Ignatios Antoniadis (LPTHE—CNRS—Sorbonne U., France & KU Leuven)
The cosmological constant in supergravity and string theory — 30+15 min.
2. Dmitry Gorbunov (INR RAS, Moscow)
Cosmology with inverse phase transition — 30+15 min.
3. Fedor Bezrukov (U. of Manchester)
Reheating in Higgs- R^2 inflation — 30+15 min.
4. Sebastian Zell (EPFL, Lausanne)
Einstein-Cartan gravity and Higgs inflation — 30+15 min.

Coffee Break. 17:30 -18:00 Moscow Time

Evening Session. 18:00 Moscow Time

Chairman: *Valeri Frolov (U. of Alberta)*

5. Andrei Linde (Stanford U.)
Initial conditions for inflation — 30+15 min.

6. Ariel Zhitnitsky (U. of British Columbia, Vancouver)
Vacuum energy of the Universe, large scale magnetic field and nontrivial topology in Quantum Field Theory — 30+15 min.

Saturday, June 5

Morning Session. 10:00 Moscow Time

Chairman: *Richard Woodard (U. of Florida, Gainesville)*

1. Misao Sasaki (Kavli IPMU, Kashiwa & U. of Tokyo)
Primordial black holes — 30+15 min.
2. Sergey Ketov (Tokyo Metropolitan U. & Kavli IPMU, Kashiwa)
Formation of primordial black holes after Starobinsky inflation in modified supergravity — 30+15 min.
3. Dmitry Levkov (INR RAS, Moscow)
Semiclassical S-matrix and black hole entropy in dilaton gravity — 30+15 min.

Lunch. 12:15-15:00 Moscow Time

Afternoon Session. 15:00 Moscow Time

Chairman: *Viatcheslav Mukhanov (LMU, Munich)*

1. Robert Myers (Perimeter Inst., Waterloo)
Quantum extremal islands made easy — 30+15 min.
2. Tom Hartman (Cornell U.)
Replica wormholes and the information paradox — 30+15 min.
3. Andrey Shkerin (U. of Minnesota)
Black hole induced false vacuum decay from first principles — 30+15 min.

Coffee Break. 17:15 -18:00 Moscow Time

Evening Session. 18:00 Moscow Time

Chairman: *Alexander Vilenkin (Tufts U.)*

4. Neil Turok (U. of Edinburgh)
Path integral for gravity — 30+15 min.

5. James Hartle (U. of California, Santa Barbara)
The impact of cosmology on quantum mechanics — 30+15 min.

6. Sergei Sibiryakov (Perimeter Inst., Waterloo)
Black Holes in Ultraviolet-Complete Horava Gravity — 30+15 min.

Sunday, June 6

Evening Session. 17:00 Moscow Time

Chairman: *Alexei Starobinsky (Landau Inst. RAS, Moscow)*

1. Markus Aspelmeyer (U. of Vienna & IQOQI)
Quantum tests of (quantum) gravity — 30+15 min.
2. Robert Wald (U. of Chicago)
Quantum superposition of massive bodies — 30+15 min.
3. William Unruh (UBC, Vancouver)
Frequency interferometry and BEC measurement of acceleration radiation — 30+15 min.
4. Philip Stamp (Pacific Inst. of Theoretical Physics & U. of British Columbia, Vancouver)
Correlated worldline theory of quantum gravity — 30+15 min.

Monday, June 7

Morning Session. 10:00 Moscow Time

Chairman: *Kostas Skenderis (U. of Southampton)*

1. Mikhail Shaposhnikov (EPFL, Lausanne)
Conformal symmetry: towards the link between the Fermi and the Planck scales — 30+15 min.
2. Valeri Rubakov (INR RAS, Moscow)
Non-singular cosmological models with strong gravity in the past — 30+15 min.
3. Alexander Kamenshchik (U. of Bologna & Landau Inst. RAS, Moscow)
Renormalization group inspired autonomous equations for secular effects in de Sitter space — 30+15 min.
4. Korumilli Sravan Kumar (Tokyo Inst. of Technology)
Non-local R^2 -like inflation, gravitational waves and non-gaussianities — 30+15 min.

Lunch. 13:00-14:00 Moscow Time

Afternoon Session. 14:00 Moscow Time

Chairman: *Alexander Kamenshchik (U. of Bologna & Landau Inst. RAS, Moscow)*

1. Tim Morris (U. of Southampton)
A perturbative continuum limit for quantum gravity — 30+15 min.
2. Frank Saueressig (Radboud U., Nijmegen)
Form factors in quantum gravity — 30+15 min.
3. Alexei Koshelev (U. da Beira Interior, Covilha)
Quantizing the analytic infinite derivative gravity theory: propagator and unitarity — 30+15 min.
4. Sergey Solodukhin (U. de Tours)
Quantum gravity, RG equations and the recurrence pole relations — 30+15 min.

Coffee Break. 17:00 -18:00 Moscow Time

Evening Session. 18:00 Moscow Time

Chairman: *Robert Wald (U. of Chicago)*

5. Valeri Frolov (U. of Alberta)
Black holes in a limiting curvature theory of gravity — 30+15 min.

6. Renata Kallosh (Stanford U.)
Quantization of gravity in the black hole background — 30+15 min.

Tuesday, June 8

Morning Session. 10:00 Moscow Time

Chairman: *Misao Sasaki (Kavli IPMU, Kashiwa & U. of Tokyo)*

1. Richard Woodard (U. of Florida, Gainesville)
How inflationary gravitons affect gravitational radiation and the force of gravity — 30+15 min.
2. Luca Buoninfante (Tokyo Inst. of Technology)
Towards a ghost-free theory of quantum gravity — 30+15 min.
3. David Langlois (APC, Paris)
Black hole perturbations in modified gravity — 30+15 min.
4. Cedric Deffayet (CNRS IAP & IHES, Paris)
Domain walls without a potential — 30+15 min.

Lunch. 13:00-15:00 Moscow Time

Afternoon Session. 15:00 Moscow Time

Chairman: *David Langlois (APC, Paris)*

1. Viatcheslav Mukhanov (LMU, Munich)
Instantons with quantum core — 30+15 min.
2. Dmitry Gal'tsov (Lomonosov Moscow State U.)
co-authors: Gerard Clement (LAPTH, Annecy) & Igor Bogush (Moscow State U.)
Smarr formulas and rod structure — 30+15 min.
3. Alexander Vikman (CEICO, Inst. of Physics, Prague)
Global dynamics for Newton and Planck — 30+15 min.
4. Alexander Zakharov (ITEP, Moscow)
Shadows around at the Galactic Center and at M87 as a tool to test gravity theories* — 30+15 min.
5. Andrei Barvinsky (Lebedev Inst. RAS, Moscow)
Closing remarks — 5 min.