

# WELCOME !

## HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

### Cosmology, Strings and New Physics

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4. - 17. August, 2019

# WELCOME !



## Dubna International Advanced School of Theoretical Physics

[Main](#)[Activity](#)[DIAS Hall](#)[People](#)[Location](#)[2019](#)[2018](#)[2017](#)[2016](#)[2015](#)[2014](#)[2013](#)[2012](#)[2011](#)[2010](#)[Phd Seminar](#)[Video records](#)[Recommended  
References](#)[HISS in Dubna](#)[Links](#)

### NEWS

*January 28 – February 1, 2019*

**XV<sup>th</sup> Winter School on Theoretical Physics**  
**Complex Systems and Advanced Materials**

*July 22 - August 2, 2019*

**Helmholtz - DIAS International Summer School**  
**Quantum Field Theory at the Limits: from Strong Fields to Heavy Quarks**

*July 28 - August 2, 2019*

**International School**  
**Advanced Methods of Modern Theoretical Physics:**  
**Integrable and Stochastic Systems**

*August 4 - 17, 2019*

**Helmholtz - DIAS International Summer School**  
**Cosmology, Strings, New Physics**

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# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

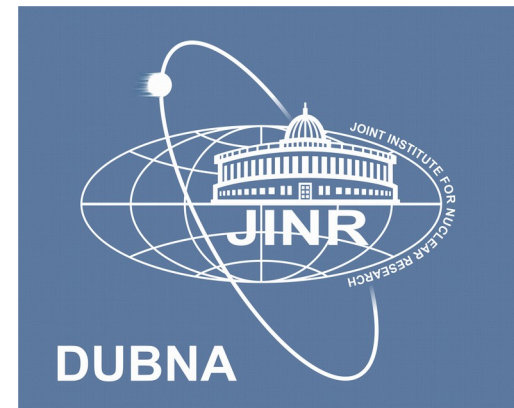
Dubna International Advanced School of Theoretical Physics / DIAS-TH

## Cosmology, Strings and New Physics

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



Karlsruher Institut für Technologie





# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

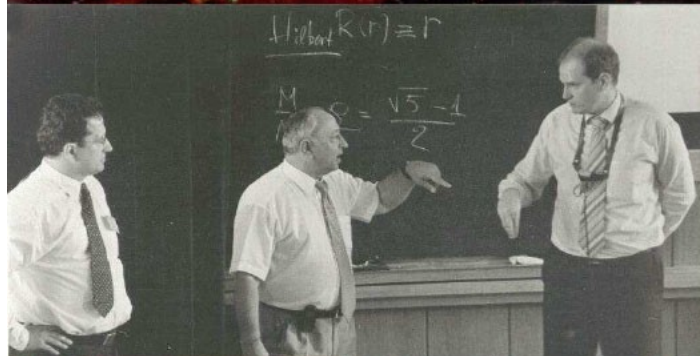
## HISS Dubna

- Created in 2004
- 6 schools in 3 years
- Funding:
  - Helmholtz President
  - DESY + GSI
  - JINR
- 15 Lecturers/ 50 Students
- 10 days + weekend



### The First School: Hot points in Astrophysics (2004)

- 29 Stud. from Russia, Belarus, Armenia, Germany, Italy, Poland, Croatia, Japan
- 25 Students from JINR Dubna
- 13 Lecturers from Russia, Ukraine
- 12 lecturers from Germany, Italy, Poland, Korea, Japan, USA
- Lecture notes printed at JINR Dubna Press



David Blaschke - Helmholtz @ JINR Dubna - 24. June 2008

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019





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Dubna International Advanced School of Theoretical Physics / DIAS-TH

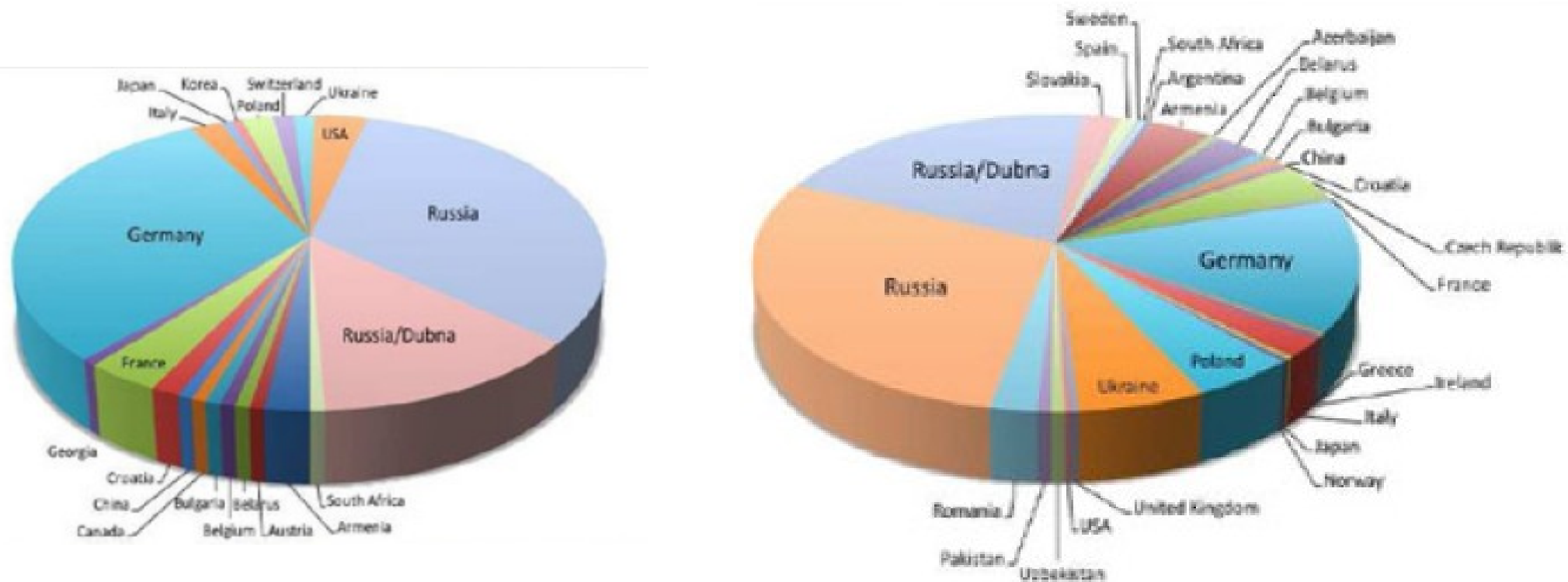
## **Startup Topics from the field “Structure of Matter” (2004 - 2006):**

1. Hot Points in Astrophysics and Cosmology (2004) – Belyaev & Blaschke
2. Heavy Quark Physics (2005) – Ali & Ivanov
3. Modern Mathematical Physics (2005) – Lechtenfeld & Filippov
4. Nuclear Theory and Astrophysical Appl. (2005) – Langanke & Voronov
5. Calculations for Modern & Future Colliders (2006) – Riemann & Kazakov
6. Dense Matter in HIC & Astro. (2006) – Wambach & Blaschke & Voronov

# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

## Statistics of Six Helmholtz International Summer Schools (2004 - 2006)



Total lecturers: 147

Total Students: 315

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

## JINR Mega-Science Project: NICA

<http://theor.jinr.ru/twiki-cgi/view/NICA/WebHome>



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Joint Institute for Nuclear Research, 4 – 17 August, 2019



# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

## The Present and the Future of HISS Dubna

Cooperation Agreement between Helmholtz Centres  
And Institutes and JINR Dubna (2014 - 2016)



### Cooperation Agreement

between

the Joint Institute for Nuclear Research (JINR) in Dubna, Russian Federation

and

the Deutsches Elektronen-Synchrotron - DESY,

the Facility for Antiproton and Ion Research (FAIR) GmbH Darmstadt with

the FAIR-Russia Research Center (FRRC) in Moscow, Russian Federation,

the Forschungszentrum Jülich GmbH,

the GSI Helmholtz Center for Heavy Ion Research GmbH with

the Helmholtz Institute Jena and the Helmholtz Institute Mainz,

the Helmholtz-Zentrum Dresden - Rossendorf,

the Karlsruhe Institute for Technology

- HCs -

on the

Collaboration in the Planning and Conduction of the HISS Helmholtz  
International Summer Schools in Dubna 2014 – 2016

Dated 04.11.2014

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

## Dubna International Advanced School of Theoretical Physics / DIAS-TH

Helmholtz International Summer Schools (HISS) Dubna

### “Structure of Matter under Extreme Conditions”

Scientific Program 2017 – 2019

Status: January 21, 2019

- Title: Nuclear Theory and Astrophysical Applications  
Organizers: S. Heinz (GSI Darmstadt), V. Voronov (JINR Dubna)  
Website: <http://theor.jinr.ru>  
Termin: 10.-22.07. 2017
- Title: Hadron Structure, Hadronic Matter and Lattice QCD,  
Organizers: O. Kaczmarek (Uni Bielefeld), O. Teryaev (JINR Dubna), M. Ilgenfritz (JINR Dubna)  
Website: <http://theor.jinr.ru>  
Termin: 20.08.-02.09. 2017
- Title: Matter under Extreme Conditions in Heavy-Ion Collisions and Astrophysics  
Organizers: M. Bleicher (FIAS Frankfurt, HIC-for-FAIR), D. Blaschke (JINR Dubna, Uni Wroclaw), L. Bravina (Uni Oslo), A. Taranenko (NRNU Moscow)  
Website: <http://theor.jinr.ru/~diastp/summer18/>  
Termin: 20.-31.08. 2018
- Title: Modern Colliders - Theory and Experiments  
Organizers: D. Kazakov (JINR Dubna), J. Reuter (DESY Hamburg), S. Moch (Uni Hamburg)  
Website: <https://indico.jinr.ru/conferenceDisplay.py?confId=418>  
Termin: 22.07.-01.08. 2018
- Title: Quantum Field Theory at the Limits: From Strong Fields to Heavy Quarks  
Organizers: U. Meissner (FZ Jülich), H. Gies (HI Jena), M. Ivanov (JINR Dubna), D. Blaschke (JINR Dubna, Uni Wroclaw),  
Website: <http://theor.jinr.ru/meetings/2019/>  
Termin: 22.7.-02.08. 2019
- Title: Cosmology, Strings and New Physics  
Organizers: B. Kämpfer (HZ Dresden-Rossendorf), F.R. Klinkhamer (KIT Karlsruhe), I. Pirozhenko, A. Filippov (JINR Dubna), A. Starobinsky (Landau Inst. & JINR Dubna)  
Website: <http://indico.jinr.ru/conferenceDisplay.py?confId=736>  
Termin: 04.-17.08. 2019

### Cooperation Agreement

between

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the Deutsches Elektronen-Synchrotron - DESY,

the Facility for Antiproton and Ion Research (FAIR) GmbH Darmstadt with

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Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



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Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, August 28 – September 10, 2016



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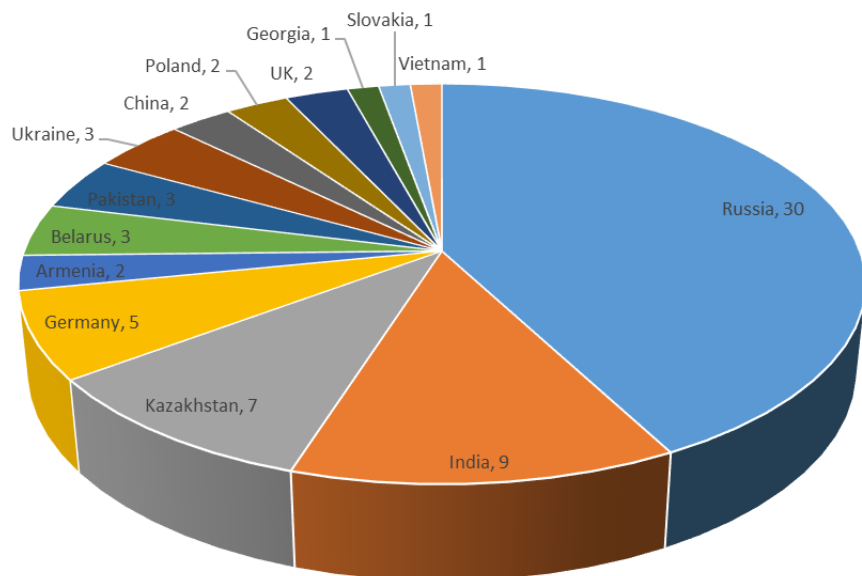
Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



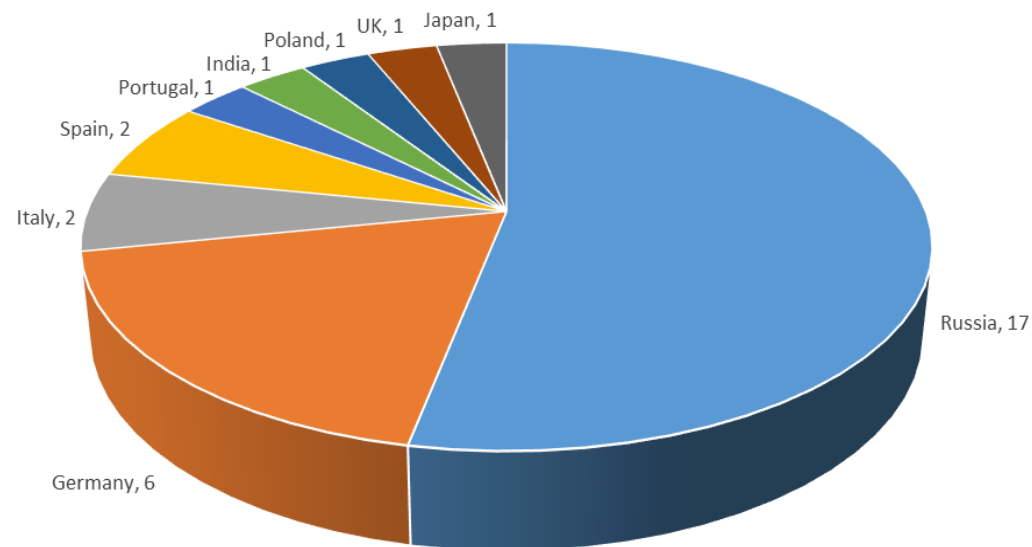
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## Statistics for Quantum Field Theory at the Limits 2016



**Participants - 71**



**Lecturers - 32**

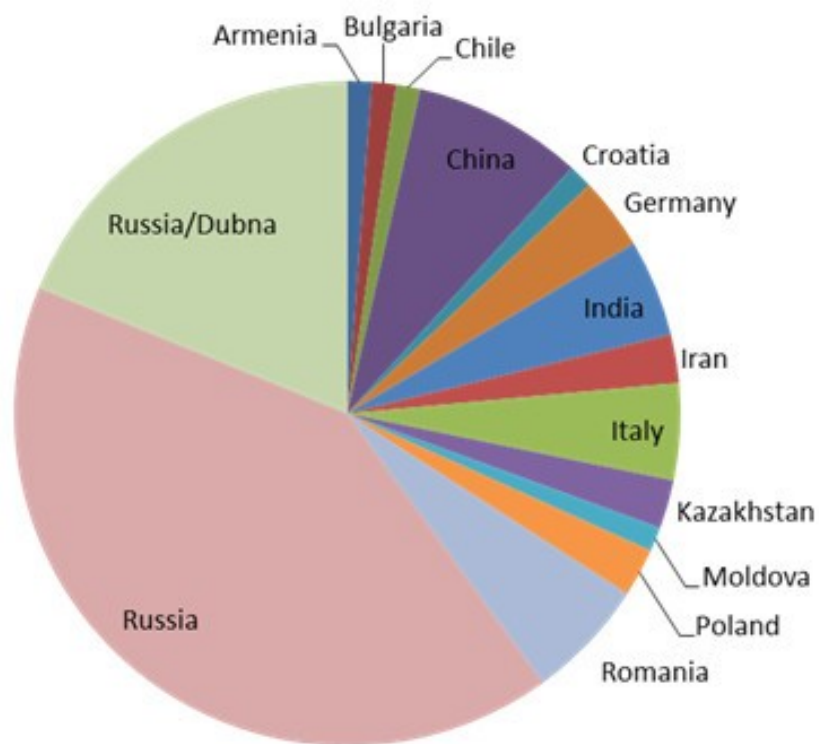
Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, July 18 – 30, 2016



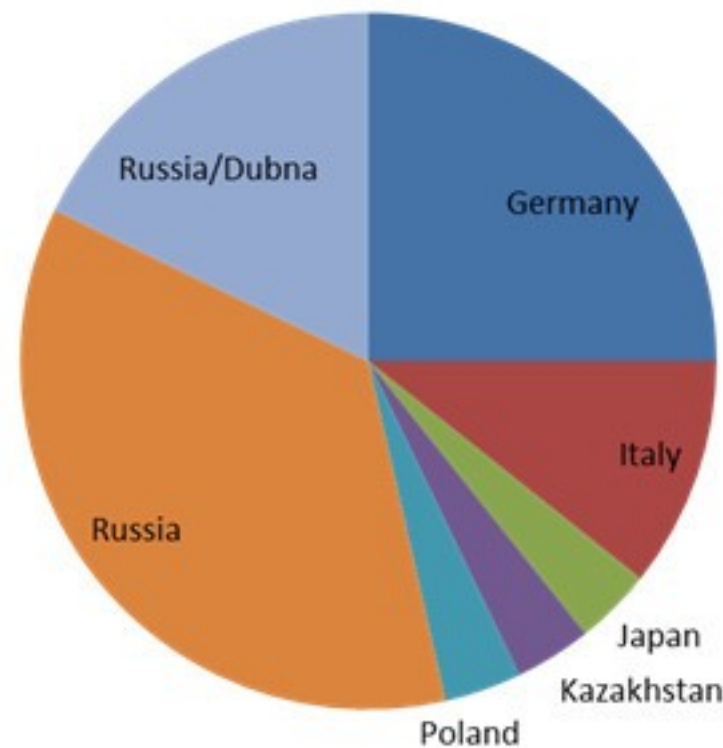
# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

## Statistics for Quantum Field Theory at the Limits 2019



**Participants - 69**



**Lecturers - 23**

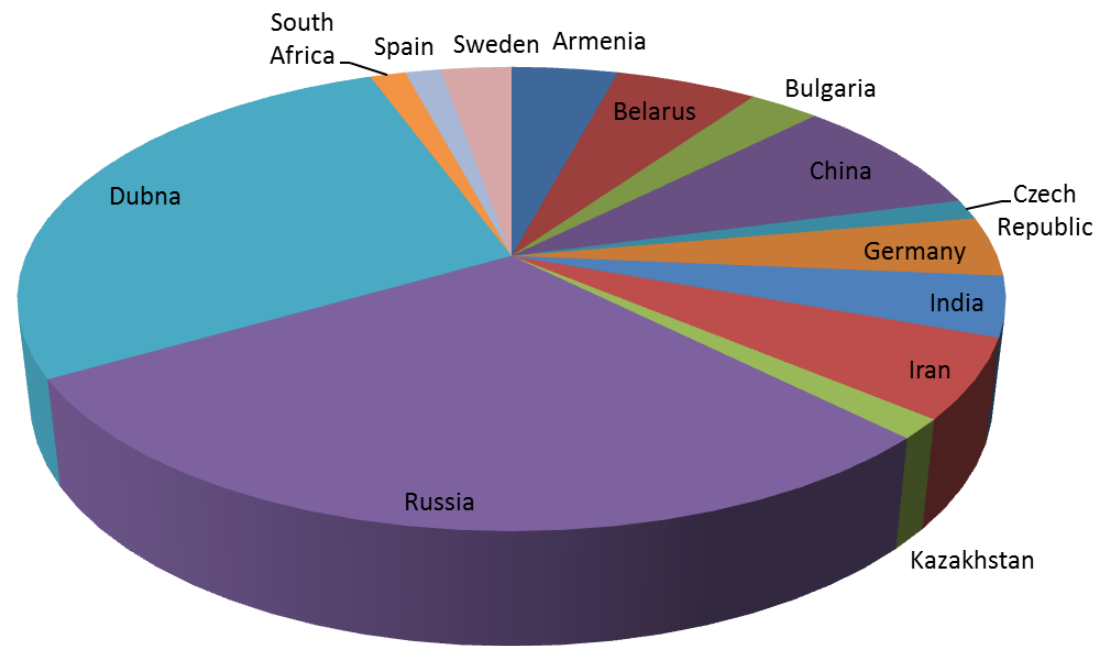
Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 22 July – 2 August, 2019



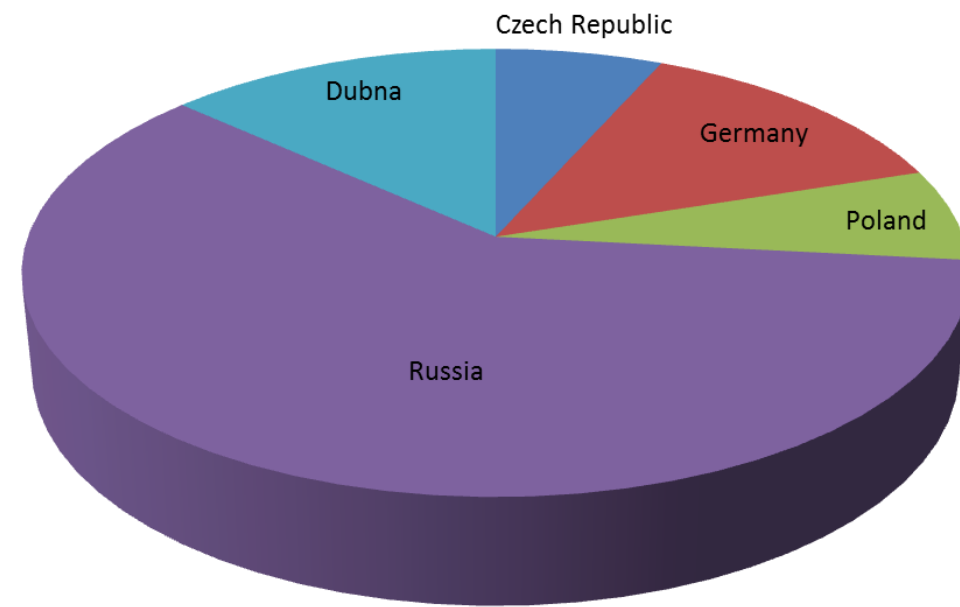
# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

## Statistics for Cosmology, Strings & New Physics 2019



**Participants - 72**



**Lecturers - 15**

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

## Dubna International Advanced School of Theoretical Physics / DIAS-TH

### COSMOLOGY, STRINGS, NEW PHYSICS

4-17 August, 2019

First week	Monday, 5/08/19	Tuesday, 6/08/19	Wednesday,7/08/19	Thursday,8/08/19	Friday, 9/08/19
9:00-9:30	<b>DMS</b>  Registration  D. Blaschke. Opening	<b>DMS</b>	<b>DMS</b>	<b>BLTP</b>	<b>DMS</b>
9:30-10:00		D. Gorbunov - II	D. Gorbunov - III	J. Buchbinder-V	A. Westphal - III
10:00-10:30					
10:30-11:30	J. Buchbinder - I	A. Vikman -I	J. Buchbinder-IV	A. Vikman –III	K. Postnov-I
11:30-12:00	Coffee Break				
12:00-13:00	D. Gorbunov - I	J. Buchbinder-III	A. Westphal – I	Westphal - II	K. Postnov-II
13:00-15:00	Lunch				
15:00-16:00	J. Buchbinder - II	N. Krasnikov	A. Vikman -II	Excursion to FLNR	A. Westphal - IV
16:00-16:30	Coffee Break				
16:30-....	<i>R. Zhokhov - 20’ F. Kazemian - 20’ T. Vetsov - 20’</i>	<i>A. Shehada - 20’ C. Möckel - 20’ M. Bures - 20’</i>	<i>A. Singh - 20’ E. Pozdeeva - 20’ Sh. Das - 20’</i>		<i>H. Sheikhahmadi-20’ N. Khosravi - 20’ A. Sen - 20’</i>

Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019



# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

## Dubna International Advanced School of Theoretical Physics / DIAS-TH

### COSMOLOGY, STRINGS, NEW PHYSICS

4-17 August, 2019

Second week	Monday, 12/08/19	Tuesday, 13/08/19	Wednesday, 14/08/19	Thursday, 15/08/19	Friday, 16/08/19
	DMS	DMS	DMS	DMS	DMS
9:30-10:30	E. Musaev-I	M. Volkov-II	E. Musaev-III	D. Kazakov-II	E. Musaev-V
10:30-11:30	A. Starobinsky-I	E. Musaev-II	A. Dolgov-I	A. Dolgov-II	A. Dolgov-III
11:30-12:00	Coffee Break				
12:00-13:00	A. Starobinsky-II	A. Starobinsky-III	V. Spiridonov-I	V. Spiridonov-II	V. Rubakov-I
13:00-15:00	Lunch				
15:00-16:00	M. Volkov-I	M. Volkov-III	D. Kazakov-I	E. Musaev-IV	V. Rubakov - II
16:00-16:30	Coffee Break				
16:30-...	<i>I. Perapechka - 30'</i> <i>H. Sheikhahmadi - 20'</i>	<i>M. Skugoreva - 20'</i> <i>E. Izotova - 20'</i> <i>A. Pikalov - 20'</i>	V. Emelianov -I,II	<i>V. Loiko - 20'</i> <i>N. Gorina - 20'</i> <i>H. Sheikhahmadi - 20'</i>	Closing

Saturday 10/08/2019 and Sunday 11/08/2019 are free days. On Saturday we plan a bus excursion to Abramtsevo.  
<http://www.abramtsevo.net/eng/>

Bogoliubov Laboratory of Theoretical Physics,  
 Joint Institute for Nuclear Research, 4 – 17 August 2019





- 1 – Hotel “Dubna”**
- 2 – House of International Meetings**
- 5 – Hotel “Grill”**
- 7 – Restaurant “Old Armenia”**
- 8 – Visit Centre**
- 9 – JINR Labs: BLTP, FLNR, LIT, FLNP, DLNP, LRB**
- 10 – Railway station “Dubna”; Express train to Moscow**

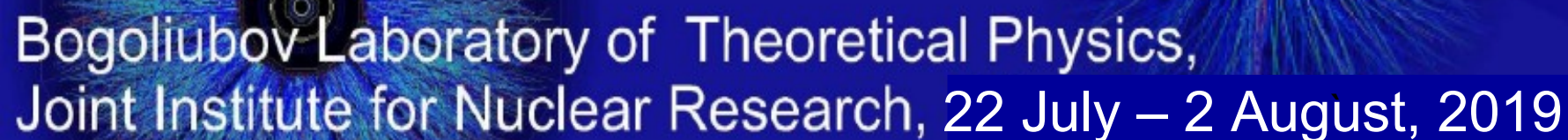




# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

**The School is opened -**



Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 22 July – 2 August, 2019



# HELMHOLTZ INTERNATIONAL SUMMER SCHOOL

Dubna International Advanced School of Theoretical Physics / DIAS-TH

**The School is opened -**



**Enjoy Your Summer School !**



Bogoliubov Laboratory of Theoretical Physics,  
Joint Institute for Nuclear Research, 4 – 17 August 2019