

Cracow, Poland 10-23.07.2017

### Summary



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46 x 1.5 hour lecture units = 92 -> ~90 lecture hours

Equivalent to an intensive one semester course with 3 lectures per week

Main focus: observational cosmology and extragalactic astrophysics (which are, actually, difficult to separate)

### Aims



- Intensive course in modern observational cosmology and extragalactic astrophysics, covering a broad spectrum of subjects
- Interactions between students and lecturers: so that you could meet leading world specialists in different fields, from different countries, discuss directly and make contacts with them
- Integration: some years (or tens of years) from now you will be leading world specialists yourself – now you are making foundations for the future scientific collaborations

# Lectures: theoretical introduction to cosmology

Lectures: observational aspects of cosmology and extragalactic astrophysics

Public talk

### 3rd COSMOLOGY SCHOOL

Students' sessions

#### Cracow, Poland 10-23.07.2017

Lectures: numerical simulations Workshops:

- Numerical simulations
- VO
- •SED fitting

## Theory

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- L. Sokolowski: the basic issues of theoretical cosmology: between theoretical physics, mathematics, astronomy... and philosophy.
- B. Novosyadlyj: all about Dark Energy

• B. Roukema: relativistic cosmology?

# Observations: cosmology



- G. Chincarini: Dark Matter from the observer's perspective
- G. de Zotti: CMB analysis and cosmological landscape after Planck; cosmology with SKA; galaxy-AGN co-evolution
- V. Martinez: Baryonic Acoustic Oscillations
- M. Bilicki: Galaxy surveys and tools to analyze them: past, present state and future
- M. Biesiada: Cosmology with gravitational waves

# Cosmology: between simulations and observations



- W. Hellwing, M. Cytowski: Simulated Universes and tools to analyze them
- R. van de Weijgart: Cosmic Web

# Observations: cluster and galaxy formation and evolution



- E. Panko: Galaxy clusters
- T. T. Takeuchi: Galaxy formation
- S. Boissier Galaxy chemical evolution Star formation laws Galactic outskirts
- V. Buat Linking stellar and dust emission Galaxy spectral components
- D. Burgarella Galaxy spectra Star formation in galaxies

# Workshops

# **3rd COSMOLOGY** SCHOOL

- W. Hellwing, M. Cytowski: numerical simulations // Gadget
- H. Heinl, J. Sorce: Virtual Observatory and its tools
- K. Malek, D. Burgarella, V. Buat, S. Boissier: SED fitting // CIGALE

## Public outreach

# 3rd COSMOLOGY SCHOOL

- A. Staruszkiewicz: "Dlaczego nie mozna zmienic przyszlosci?" (Why we cannot change the past? in Polish)
- Astronomical observations for general public

# Proceedings

# 3rd COSMOLOGY SCHOOL

- Not decided yet, but you will be informed about the details soon (and the information will appear at the School's web page)
- Anyway, please make sure that you have given us a valid postal address so that you can receive them

# Proceedings



#### Cracow, Poland 10-23.07.2017

• All the School related materials (presentations, recordings, instructions, manuals) remain in the School page available to download

 If you have any photos or materials you would like to share with others – please send them to the School mail address

# **Summer 2018: 4<sup>th</sup> Cosmology School?**

- Similar focus (observational cosmology)
- Lectures + workshops
- Even if some of them similar to this time, overall there should be a lot of **different content**
- Hopefully: worth coming even if you participated this School – stay tuned using:
- our web page, e-mails
- Facebook: 586 "unique openings" of our School's page; range: 14,114 people among which 13,502 actively reacted at some point

## To wrap up...



- If you have filled the survey you received, it would be most helpful to us to organize next events, and we take all the comments serious!
- Whoever did not receive his certificate yet, go to the LOC and get it!

### To wrap up...



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# Discussion (with coffee waiting for us already)



- Did the material presented meet your expectations?
- What was new to you and what did you already know before?
- Which parts would you like to have extended or treated more in detail?
- What are, in your opinion, the most important subjects for the future of the observational cosmology?
- Did the School help you to refine your vision of your scientific future or provided you new tools for your work?

# Special thanks!

# 3rd COSMOLOGY SCHOOL

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•LOC: **Goha Bankowicz,** Aleksander Herzig, Tomasz Kundera, Tobiasz Gorecki, Magda Krupa, Aga Kurcz, Ela Kuligowska

- Coffee staff: Dominika Achtel, Ania Wojtowicz, Mateusz Ralowski, Iwona Bronisz, Wojtek Balon, Pawel Piatek, Michal Jurkowski, Jaroslaw Dzisiewicz, Pavlo Oliynyk, Julia Piotrowska, +Artem Poliszczuk
- Camera: Bart Smierciak, +Mateusz Ralowski
- SOC: AP, Marek Jamrozy, Janusz Krywult, Michal Chodorowski

### **Summer 2018: 4<sup>th</sup> Cosmology School?**

See you next year!