

COSMOs

COSMO-97

International Workshop

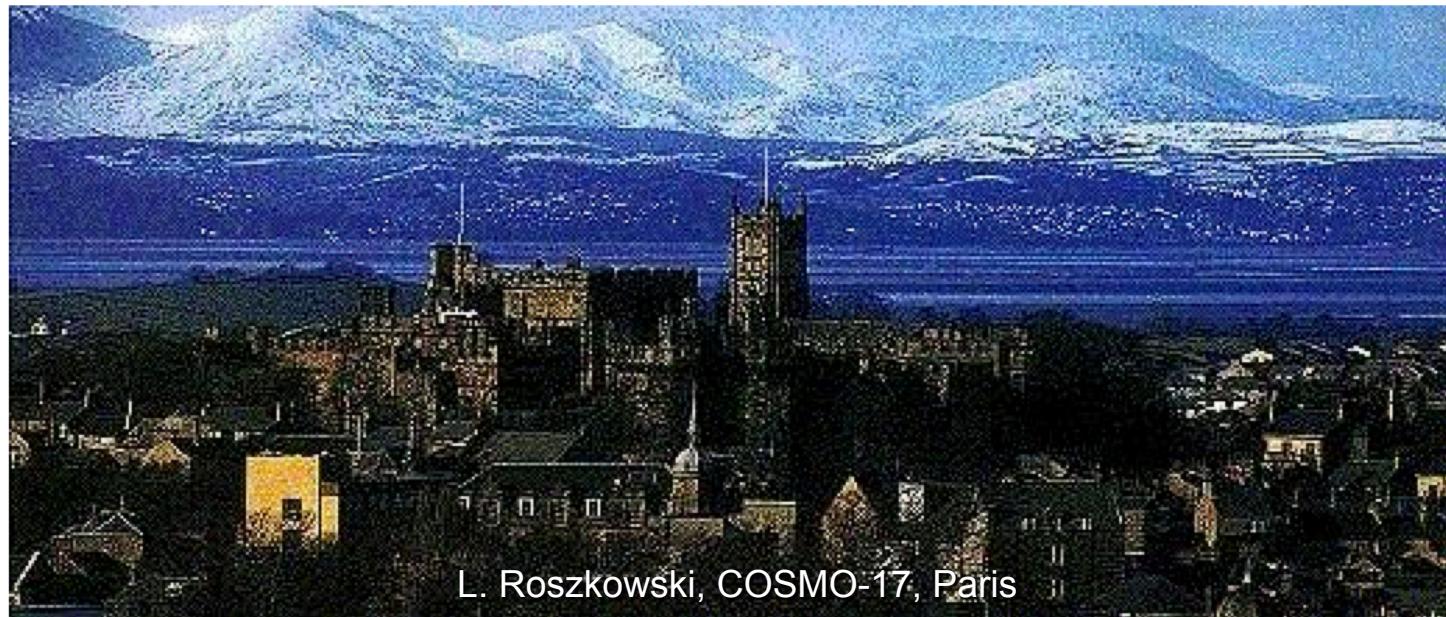
on

PARTICLE PHYSICS AND THE EARLY UNIVERSE

15 - 19 September 1997

Ambleside, Lake District, England

Organised by: Lancaster University



L. Roszkowski, COSMO-17, Paris

COSMO

Particle Physics and the Early Universe

*annual meetings of particle physics, cosmology and astrophysics
theory community*



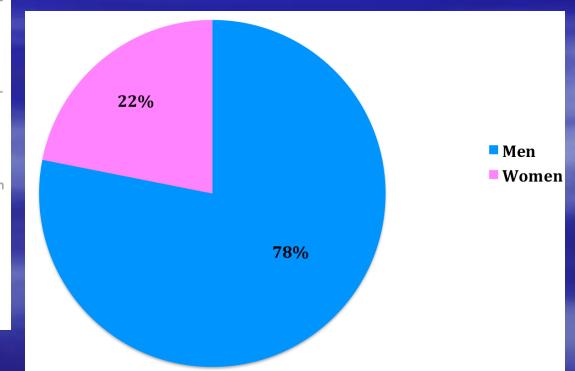
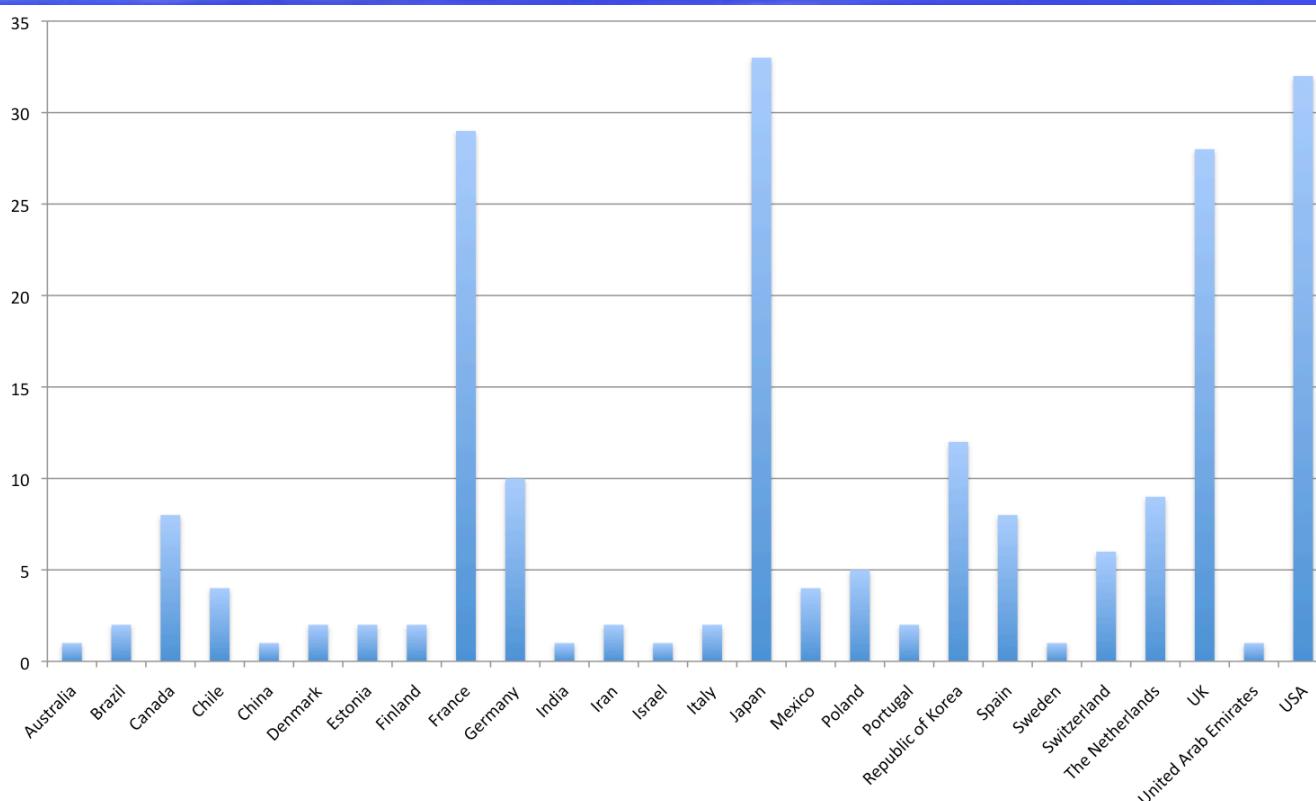
- '97 Ambleside, UK
- '98 Asilomar, CA, USA
- '99 Triest, Italy
- '00 Cheju, S. Korea
- '01 Rovaniemi, Finland
- '02 Chicago, IL, USA
- '03 Ambleside, UK
- '04 Toronto, Canada
- '05 Bonn, Germany
- '06 Lake Tahoe (UC Davis)
- '07 Sussex, UK

- '08 Madison, WI, USA
- '09 CERN, CH
- '10 Tokyo, Japan
- '11 Porto, Portugal
- '12 Beijing, P.R. China
- '13 Cambridge, UK
- '14 Chicago, IL, USA
- '15 Warsaw, Poland
- '16 Ann Arbor, MI, USA
- '17 Paris, France

COSMO-17

Some numbers

- TOTAL 209





Local Organising Committee

- Gregorio Bernardi LPNHE
- ~~Pierre Binetruy APC~~
- Sebastien Bongard LPNHE
- Hector Gil-Marin LPNHE
- **Stavros Katsanevas APC**
- David Langlois APC
- Sebastien Renaux-Petel IAP

Secretarial support

- **Sarodia Vydelingum APC**
- Vera de sa Varanda

L. Roszkowski, COSMO-17, Paris



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Univ. of California at Santa Barbara, USA

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Carlos Martins

Univ. of Porto, Portugal

Antonio Riotto

Univ. of Geneva, Switzerland

Goran Senjanović

GSSI and ICTP, Italy

Dragan Huterer

Univ. of Michigan, USA

Traditions:

- No summary talk
- Rain
- Each meeting is different
- Common themes
- ...

COSMO plate

- **Gravitational waves**
 - **CMB**
 - **LSS**
 - **Power spectrum**
 - **Cosmic rays**
 - **Hubble constant H**
 - **Dark energy**
 - **DM**
 - **WIMP**
 - **Axions**
 - ...
 - **Other relics**
 - **Neutrinos**
 - ...
 - **Astronomical surveys**
 - **Collider physics**
 - ...
- Big Bang:
- **Inflation**
 - **PBHs**
 - **Baryo/lepto-genesis**
 - **BBN**
 - **Gravity**
 - **Particle cosmology**
 - **String cosmology**
 - **Models of BB (bouncing, etc)**
 - **Holography, etc.**
 - ...

Cosmo tools

➤ **ladder**



➤ **window**



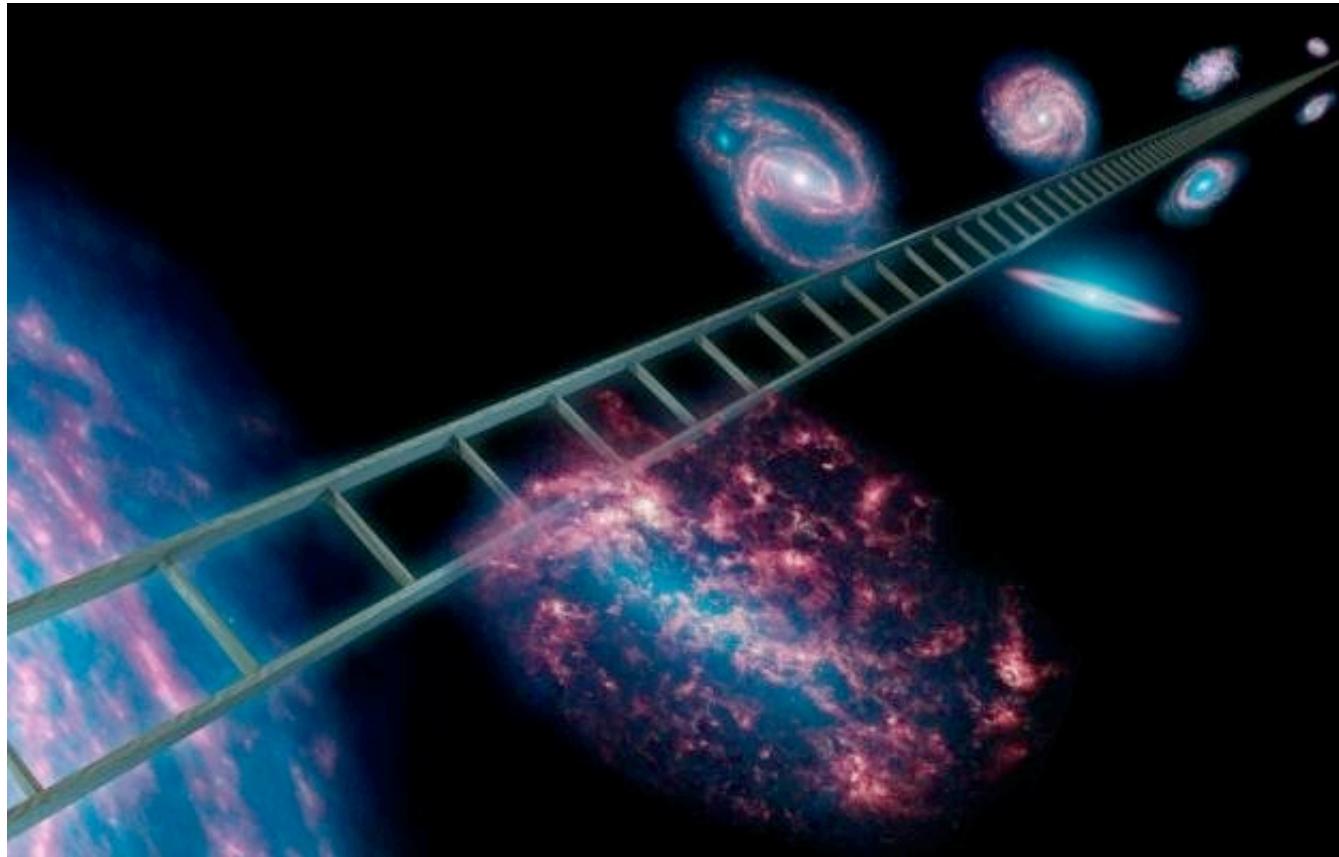
➤ **net**



➤ **broom**







W.L. Freedman

My favorite value: $H_0 = \sqrt{0.5}$ (to make a theorist's life easier) ☺

Particle content



F. Halzen:
Neutrinos are
never boring

The Universe is never boring

Dark matter



© Ron Leishman * www.ClipartOf.com/1047187

- mass: 20+ orders of magnitude span
- cross section: 30+ orders of magnitude

Many ideas, need convincing signal

Impressive experimental effort



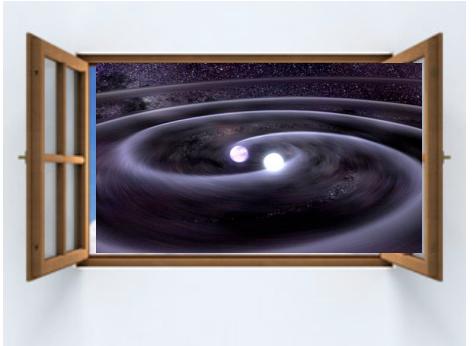
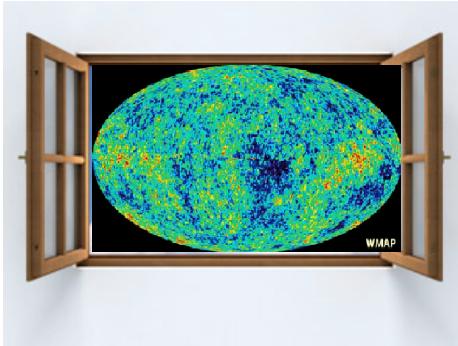
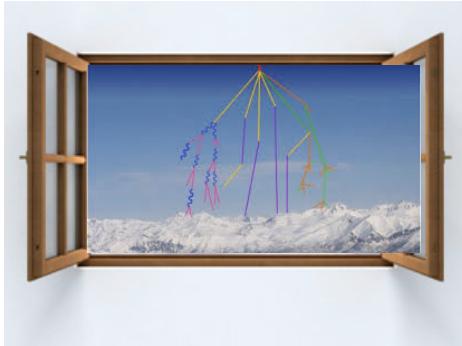
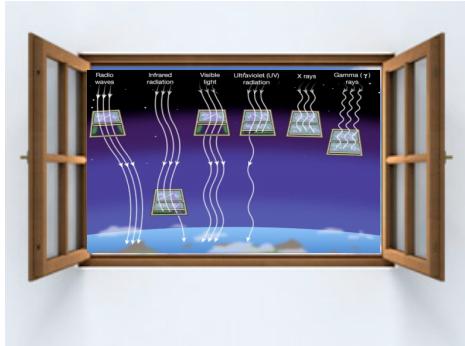
Windows...

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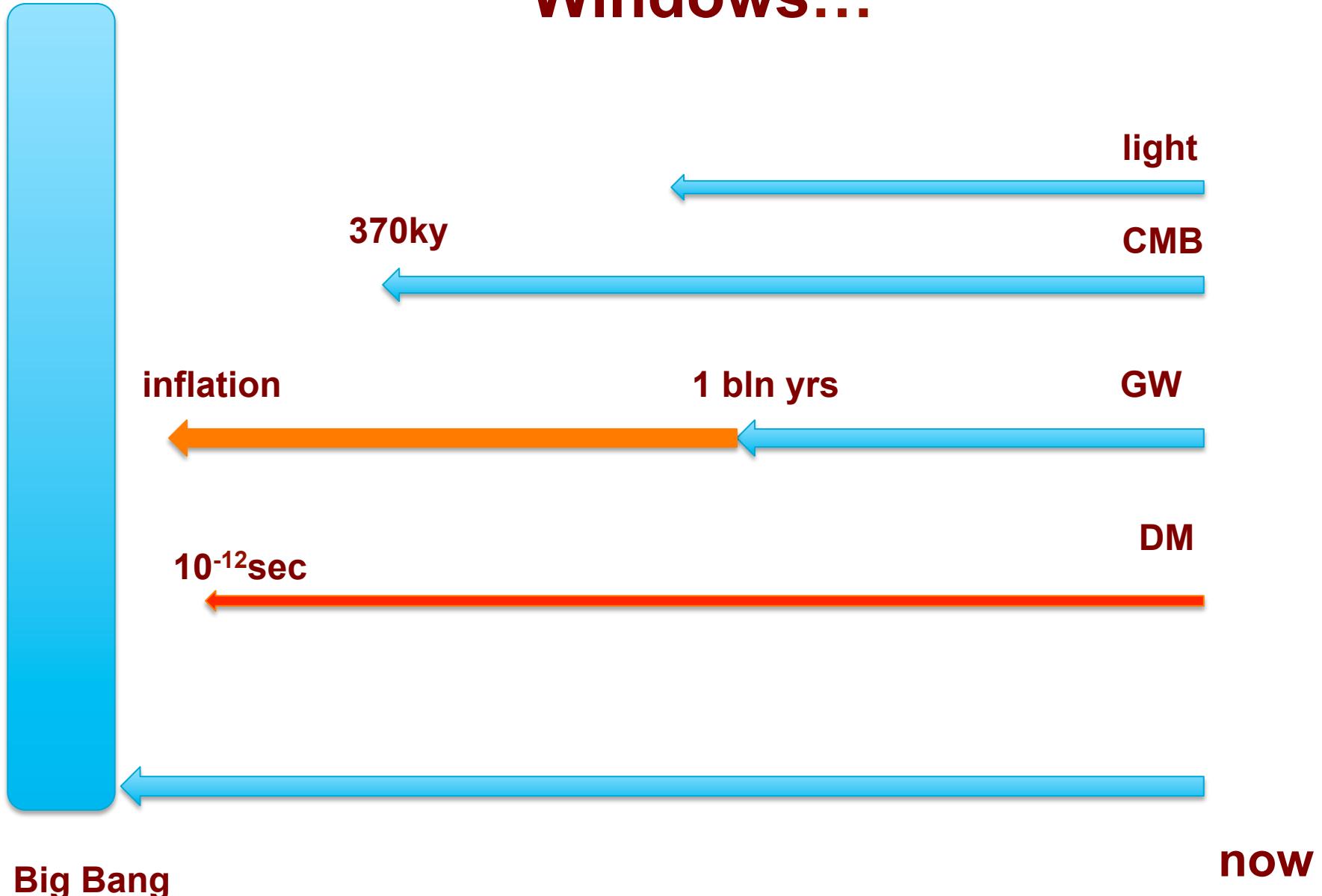
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Windows...



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Windows...



The Universe is never boring

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- '18 ????

**COSMO-18 (Aug 27-31) will be hosted by
the following IBS centers in Daejeon**

- Center for Theoretical Physics of the Universe (CTPU)
- Center for Axion and Precision Physics Research (CAPP)
- Center for Underground Physics (CUP)



A Korean Government funded research
institute currently consisting of 26 centers

Daejeon (5th largest city in south Korea) :
**The city of science and technology (Wikipedia: “Known as
the Silicon Valley of Korea”)**

Train: 1 hour from Seoul station to Daejeon station
Airport Bus (every 15 minutes): 2.5 hour non-stop bus from Incheon Airport
to Daejeon

Also located near Daejeon is (for the conference excursion)
Gongju City: UNESCO World Heritage
(an ancient kingdom of Korea that flourished from 18 BC to 660 AD)



Inquires:
Kenji Kadota
(kadota@ibs.re.kr),
Sanghyeon Chang
(schang@ibs.re.kr)





**Looking forward
to seeing you
in S. Korea!**