Title: Session 2 - Andrea Fontanella

Speakers: Andrea Fontanella

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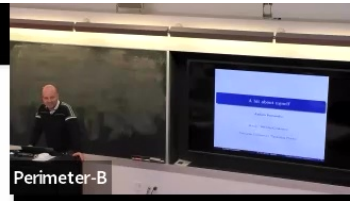


A bit about myself

Andrea Fontanella

Postdoc Welcome Conference

Perimeter Institute for Theoretical Physics

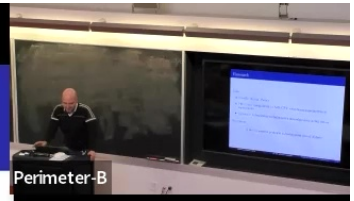
- Originally from Vicenza, Italy

- Did my undergraduate and Master at the University of Padova
- Erasmus in Imperial College London
- PhD at University of Surrey
- Postdocs: IFT Madrid (1 year), Humboldt University of Berlin (2 years), ITMP Lomonosov Moscow State U. (5 months)

Hobbies

- Music. Play the trumpet (since I was 12)

- Keep active. Running, mountain biking, swimming



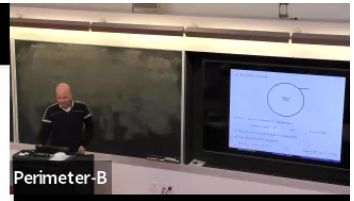
Research

Topic

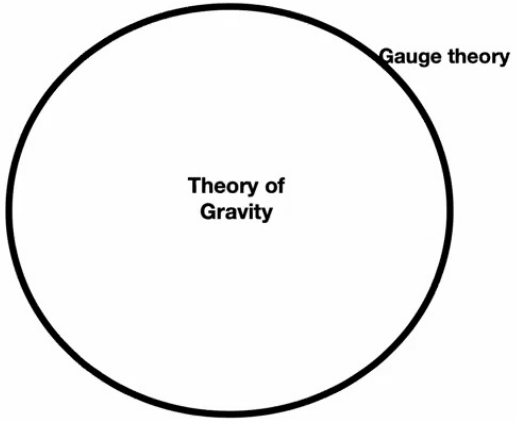
- Broadly: String Theory
- PhD topic: integrability in AdS/CFT, near-horizon geometries in supergravity
- Currently: Integrability techniques for non-relativistic string theory

Motivation

Is the holographic principle a fundamental law of Nature?



- Holographic principle:

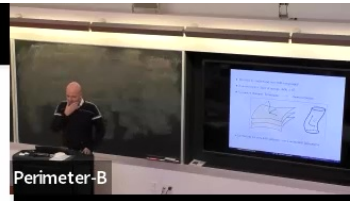


- First concrete realization (J. Maldacena)

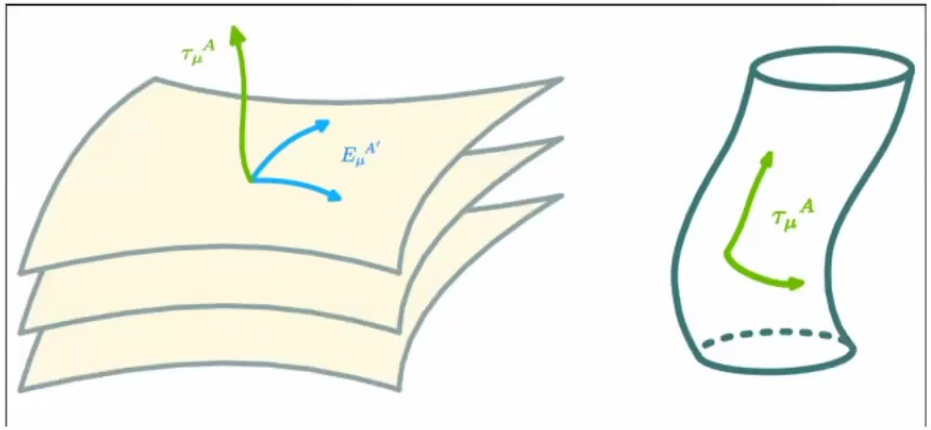
$$\text{Strings in } AdS_5 \times S^5 \quad \Longleftrightarrow \quad \mathcal{N} = 4 \text{ SYM}$$

- Many non-trivial tests thanks to integrability
- Generalisations (still integrable):

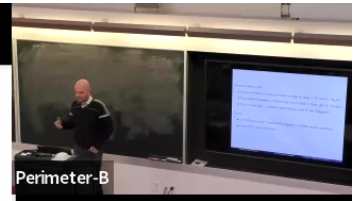
$$\text{Strings in } AdS_d \times \mathcal{M}^{10-d} \quad \Longleftrightarrow \quad \text{some CFT in } d-1 \text{ dim}$$



- We need to understand non-AdS holography!
- Non-relativistic limit of strings $AdS_5 \times S^5$
- Geometry changes: Lorentzian $\longrightarrow$ Newton-Cartan



- Interesting for non-AdS (actually non-Lorentzian) holography



Progress made so far

- Classical motions of non-relativistic strings in $AdS_5 \times S^5$ (with J. Nieto)
- Perturbative expansion of the string action (with J. Nieto and A. Torrielli)
- Found a Lax pair $\rightarrow$ classical integrability (with S. van Tongeren)

Future

- use of the emergent integrability property to extract string spectrum
- identify the dual field theory


Thank You
Gracias
Tak
Grazie
Danke
Merci
Kiitos
Takk
Спасибо
شكرا
Köszönöm
Dankjewel
Toda
Sagolun
ありがとう
Mahalo
Xièxie
Efharisto
Faleminderit
Terima Kasih
Mercé
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