

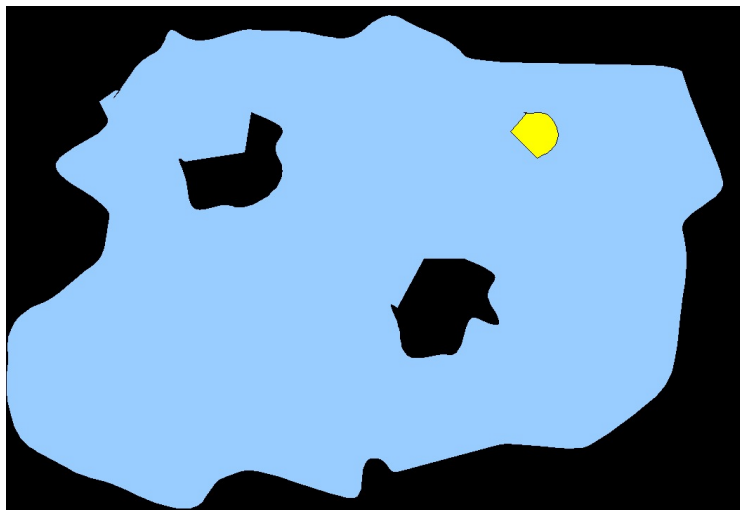
# Badatelská komunikace

Vojtěch Svoboda

October 3, 2018

(hrubá zkratka)

# Hranice lidského poznání



kredit: []

# Poslední Nobelovy ceny za fyziku

18

## The Nobel Prize in Physics 2018



Ill. Niklas Elmehed. © Nobel Media

Arthur Ashkin

Prize share: 1/2



Ill. Niklas Elmehed. © Nobel Media

Gérard Mourou

Prize share: 1/4



Ill. Niklas Elmehed. © Nobel Media

Donna Strickland

Prize share: 1/4

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Cesta je dlouhá

- Zelenáč
- Začátečník
- Novice
- Středně pokročilý
- Pokročilý
- Vědec
- Guru
- Kouzelník

# Outline

1 Úvod

2 Vědecký článek

3 Konference

# Co obnáší badatelská práce

- Bádání.
- Psaní žádostí o granty.
- Nemůže mít klapky na očích.
- Starost o dorost, výuka.
- Byrokracie (bohužel).
- Prezentování, publikování (konference, články, monografie).
- Oponentská práce.
- Neustálé "keep to date", rešerše.

# "Publish or perish" či "Publikuj, nebo se pakuj"

## Science citation index

- Články v časopisech.
- Vystoupení na konferenci.
- Publikační životopis.
- Citační životopis.

Komunikace

# Outline

1 Úvod

2 Vědecký článek

3 Konference

G Model

HESON-8751; No. of Pages 7

ARTICLE IN PRESS

Fusion Engineering and Design xxx (2016) xxx–xxx



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Contents lists available at ScienceDirect

Fusion Engineering and Design

journal homepage: [www.elsevier.com/locate/fuseengdes](http://www.elsevier.com/locate/fuseengdes)

## Remote operation of the GOLEM tokamak for Fusion Education

O. Grover<sup>a</sup>, J. Kocman<sup>a</sup>, M. Odstrčil<sup>c</sup>, T. Odstrčil<sup>c</sup>, M. Matusu<sup>a</sup>, J. Stöckel<sup>a,b</sup>, V. Svoboda<sup>a,\*</sup>,  
G. Vondrasek<sup>a</sup>, J. Zará<sup>d</sup>

<sup>a</sup> Faculty of Nuclear Sciences and Physical Engineering CTU Prague, CZ-115 19, Czech Republic

<sup>b</sup> Institute of Plasma Physics AS CR, Prague CZ-182 21, Czech Republic

<sup>c</sup> University of Southampton, Southampton SO17 1BJ, UK

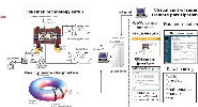
<sup>d</sup> Faculty of Electrical Engineering CTU Prague, CZ-166 27, Czech Republic

<sup>e</sup> Max-Planck-Institut für Hochphysik, D-85748 Garching, Germany

### HIGHLIGHTS

- The remote operation of the tokamak GOLEM for educational purposes.

### GRAPHICAL ABSTRACT



### ARTICLE INFO

#### Article history:

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Remote participation

Education

Nuclear fusion

### ABSTRACT

Practically oriented education in the field of thermonuclear fusion is highly requested. However, the high complexity of appropriate experiments makes it difficult to develop and maintain laboratories where students can take part in hands-on experiments in this field of study. One possible solution is to establish centres with specific high temperature plasma experiments where students can visit such a laboratory and perform their experiments in-situ. With the advancements of IT technologies it naturally follows to make a step forward and connect these with necessary plasma physics technologies and thus allow to access even sophisticated experiments remotely. Tokamak GOLEM is a small, modest device with its infrastructure linked to web technologies allowing students to set-up necessary discharge parameters, submit them into a queue and within minutes obtain the results in the form of a discharge logpage.

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# Publikace - jiná liga

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Populating the landscape: A top-down approach  
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Times Cited: 5
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Information loss in black holes  
PHYSICAL REVIEW D 72 (8): Art. No. 084013 OCT 2005  
Times Cited: 30
3. **Hawking SW**, Hertog T  
Why does inflation start at the top of the hill?  
PHYSICAL REVIEW D 66 (12): Art. No. 123509 DEC 15 2002  
Times Cited: 16
4. **Hawking SW**, Hertog T, Reall HS  
Trace anomaly driven inflation  
PHYSICAL REVIEW D 63 (8): Art. No. 083504 APR 15 2001  
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5. **Hawking SW**, Hertog T, Reall HS  
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PHYSICAL REVIEW D **73**, 123527 (2006)

## Populating the landscape: A top-down approach

S. W. Hawking<sup>1</sup> and Thomas Hertog<sup>2</sup>

<sup>1</sup>*DAMTP, University of Cambridge, Wilberforce Road, Cambridge CB3 0WA, UK*

<sup>2</sup>*Physics Department, Theory Division, CERN, CH-1211 Geneva 23, Switzerland*

(Received 20 February 2006; published 23 June 2006)

We put forward a framework for cosmology that combines the string landscape with no boundary initial conditions. In this framework, amplitudes for alternative histories for the universe are calculated with final boundary conditions only. This leads to a top-down approach to cosmology, in which the histories of the universe depend on the precise question asked. We study the observational consequences of no boundary initial conditions on the landscape, and outline a scheme to test the theory. This is illustrated in a simple model landscape that admits several alternative inflationary histories for the universe. Only a few of the possible vacua in the landscape will be populated. We also discuss in what respect the top-down approach differs from other approaches to cosmology in the string landscape, like eternal inflation.

DOI: 10.1103/PhysRevD.73.123527

PACS numbers: 98.80.Qc, 11.25.-w, 98.80.Cq

### I. INTRODUCTION

It seems likely that string theory contains a vast ensemble of stable and metastable vacua, including some with a small positive effective cosmological constant [1] and the low energy effective field theory of the standard model. Recent progress on the construction of metastable de Sitter vacua [2] lends further support to the notion of a string landscape [3], and a statistical analysis gives an idea of the distribution of some properties among the vacua [4]. But it has remained unclear what is the correct framework for cosmology in the string landscape. There are good reasons to believe, however, that a proper understanding of the cosmological dynamics will be essential for the landscape to be predictive [5].

In particle physics, one usually computes S-matrix ele-

ments, and there is certainly no opportunity for observing multiple copies of the universe.

In fact if one does adopt a bottom-up approach to cosmology, one is immediately led to an essentially classical framework, in which one loses all ability to explain cosmology's central question—why our universe is the way it is. In particular a bottom-up approach to cosmology either requires one to postulate an initial state of the universe that is carefully fine-tuned [10]—as if prescribed by an outside agency—or it requires one to invoke the notion of eternal inflation [11], which prevents one from predicting what a typical observer would see.

Here we put forward a different approach to cosmology in the string landscape, based not on the classical idea of a single history for the universe but on the quantum sum over

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**Trace anomaly driven inflation**  
**Hawking SW, Hertog T, Reall HS**  
**PHYSICAL REVIEW D**  
63 (8): Art. No. 083504 APR 15 2001

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**Abstract:**  
This paper investigates Starobinsky's model of inflation driven by the trace anomaly of conformally coupled matter fields. This model does not suffer from the problem of contrived initial conditions that occurs in most models of inflation driven by a scalar field. The universe can be nucleated semiclassically by a cosmological instanton that is much larger than the Planck scale provided there are sufficiently many matter fields. There are two cosmological instantons: the four sphere and a new "double bubble" solution. This paper considers a universe nucleated by the four sphere. The AdS/CFT correspondence is used to calculate the correlation function for scalar and tensor metric perturbations during the ensuing de Sitter phase. The analytic structure of the scalar and tensor propagators is discussed in detail. Observational constraints on the model are discussed. Quantum loops of matter fields are shown to strongly suppress shea scale metric perturbations, which implies that short distance modifications of gravity would probably not be observable in the cosmic microwave background. This is probably true for any model of inflation provided there are sufficiently many matter fields. This point is illustrated by a comparison of anomaly driven inflation in four dimensions and in a Randall-Sundrum brane-world model.

**KeyWords Plus:**  
ENERGY-MOMENTUM TENSOR, BRANE-WORLD COSMOLOGY, EARLY UNIVERSE, GRAVITY, ADS, PERTURBATIONS, INSTANTONS, FLATNESS, HORIZON, SPACE

# Citační analýza

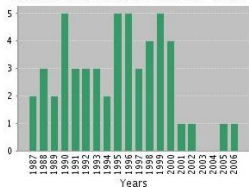


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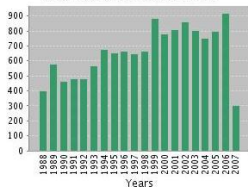
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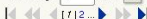
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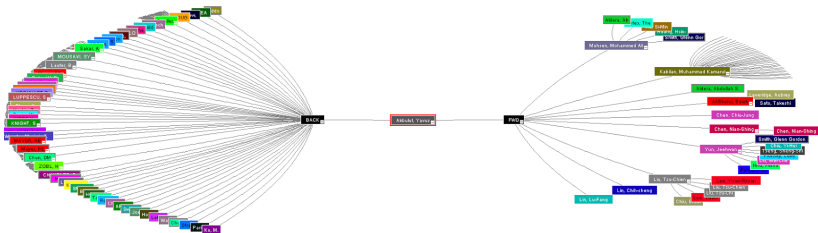


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# Outline

1 Úvod

2 Vědecký článek

**3** Konference



kredit:

- Pozvané přednášky
- Shrnující přednášky
- Klasické přednášky
- Posterové sekce
- ... welcom párty, doprovodný pr., farw. párty, satelitní workshopy

Vykomunikovat třeba až 1000 příspěvků ..



# Program conference

| Time | Monday<br>June 17th  | Tuesday<br>June 18th   | Wednesday<br>June 19th                      | Thursday<br>June 20th  | Friday<br>June 21st   |                 |
|------|--|--|---|--|---|-----------------|
| 8h30 |  |  |   |  |   |                 |
| 9h   | Opening session  | I-2.01 D.Pesme   | I-3.01 M.L.Watkins                          | I-4.01 G.Morfill   | O-5.01 H.Henriksson<br>O-5.02 K.D.Zastrow   |                 |
| 10h  | Hannes Alfvén Prize lecture<br>coffee  | I-2.02 A.Sips  | I-3.02 R.Jaenicke                           | I-4.02 L.N.Vyacheslavov  | O-5.03 A.Stäbler<br>O-5.04 G.T.Huysmans<br>O-5.05 J.Candy                             |                 |
| 11h  | I-1.01 H.Lesch<br>I-1.02 P.Muggli  | I-2.04 M.Roth<br>I-2.05 R.Kodama   | I-3.04 J.T.Mendonça<br>I-3.05 K.Krushelnick | I-4.04 W.Dorland<br>I-4.05 E.Ascasibar   | O-5.06 I.Nunes<br>O-5.07 M.v.Hellermann<br>O-5.08 B.E.Chapman<br>O-5.09 Y.V.Yakovenko |                 |
| 12h  | I-1.03 B.Saoutic   | I-2.06 I.Cook  | I-3.06 P.Helander                           | I-4.06 H.Summers   |   |                 |
| 13h  | lunch  | lunch  | lunch                                       | lunch  | lunch   |                 |
| 14h  | I-1.04 G.Counsell<br>I-1.05 T.Fukuda   | I-2.07 T.Donné<br>I-2.08 A.Fasoli  | departure 13h30<br>Montreux station         | I-4.07 M.Okabayashi<br>I-4.08 W.A.Cooper                                       | I-5.01 U.Schramm<br>I-5.02 F.Porcelli   |                 |
| 15h  | O-1.01 S.Jachmich<br>O-1.02 S.V.Lebedev<br>O-1.03 V.Krivinski<br>O-1.04 C.Castaldo | O-2.01 P.Lotte<br>O-2.02 M.J.Hole<br>O-2.03 J.Stöckel<br>O-2.04 P.R.Thomas                               | Excursion                                   | O-4.01 E.Poli<br>O-4.02 A.D.Turnbull<br>O-4.03 S.Coda<br>O-4.04 Voitsekhovitch | I-5.03 D.D.Ryutov   |                 |
| 16h  | coffee<br>O-1.05 J.Decker<br>O-1.06 F.Sardei                                       | coffee<br>O-2.05 B.Goncalves<br>O-2.06 H.W.Müller  |   | Edge, SOL, and Director Plasma<br>Turbulence and Transport                     | coffee<br>O-4.05 Krasheninnikov<br>O-4.06 A.Bers                                      | Closing session |
| 17h  | O-1.07 B.Esposito<br>O-1.08 V.E.Fortov<br>O-1.09 T.Estrada                         | coffee<br>O-2.07 G.Martin<br>O-2.08 M.R.Wade<br>O-2.09 D.A.Gates   |   | return<br>19h00<br>Montreux station  | O-4.07 B.Coppi<br>O-4.08 M.Krämer<br>O-4.09 N.N                                       |                 |
| 18h  |  |  |   |  |   |                 |
| 19h  | 18h30 Montreux Pier<br>Reception<br>Steamer "Lausanne"                             | Evening session<br>18h00 - 20h00<br>Prof. Ian Fells<br>Clean and Secure Energy for<br>the 21st Century ? |   | 18h30<br>departure for<br>Gala Dinner  |   |                 |



Programme of the 29th EPS Conference on Plasma Physics and Controlled Fusion, Montreux, 2002 status : May 30!

# Posterová sekce





## LOC:

- Sehnat magnety.
- First announcement + Call for papers.
- Second announcement.
- Book of abstracts.
- Konference.
- Proceedings.

## AUTOR:

- Celoroční práce.
- Přihlášení sebe a příspěvku na konferenci.
- Sepsání jednostránkového abstraktu.
- 4-stránkový proceeding.
- Sestavení prezentace či posteru.
- Odprezentování.

# Kýžený závěr

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