

# Fiat Lux Freshman Seminars: Origin of the Universe, Life, and Consciousness

## Instructor:

- **Katsushi Arisaka**, Professor of Physics & Astronomy
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## Assistant:

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## Meeting:

- Fall 2012 quarter, starting **October 23 (Tue)**
- Weekly meeting on **Tuesday at 10:30 – 11:50**
- Total **7 meetings**: October 23, 30, November 6, 13, 20, 27, and December 4
- Location: **4330 Physics and Astronomy Building**.
- ~20 students

## Purpose:

- Why are we here? This is the most fundamental question that has been asked repeatedly. Recent progress in particle physics and cosmology has revealed that the universe started from a tiny hot dense object called the Big Bang some 13.7 billion years ago. We also realized that there was nothing other than light at the beginning. Therefore Fiat Lux has been scientifically proven. It means that, to develop extremely complex objects such as human being, a series of so-called symmetry breaking events must be necessary to create something from nothing step by step. Four most critical symmetry-breaking events are presented and discussed: **origin of the universe, particles, life, and consciousness**.

## Proposed Program:

- The program will consist of the following:
  - Weekly lecture by Arisaka (60 minutes)
  - Followed by Q&A, informal discussion (20 minutes)
  - Reading assignments and written reports (due on Oct 20 and Nov 21)
  - Oral presentation (on November 27)

## *Tentative Course Outline*

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<u>Week</u>	<u>Day</u>	<u>Topics</u>
4	October 23	Orientation, the Universe we live, physics laws
5	October 30	Beginning of the Universe: the big bang – <i>Fiat Lux</i>
6	November 6	Evolution of Universe: creation of particles and structures
7	November 13	Origin of Life
8	November 20	Origin of Consciousness
9	November 27	Short presentation by students
10	December 4	the last lecture: why are we here?

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### *Reading Assignment*

Three popular science books below are required to read through this course. Please read the first one (“**Just Six Numbers**”) by **October 20 (Sun)** and write a short (~1/2 page) book review (in MS Word). Send it to [gonzalez@physics.ucla.edu](mailto:gonzalez@physics.ucla.edu).

Please read another book (either “Life Ascending” or “I of the Vortex”) by November 21 (Sun). Write a short (~1/2 page) book review.

Then you are encouraged to read the remaining one by December 23 (Sun). It is not required but highly recommended.

- 1. Just Six Numbers: The Deep Forces That Shape The Universe**  
by Martin J. Rees, \$11.65
- 2. Life Ascending: The Ten Great Inventions of Evolution**  
by Nick Lane, \$16.95
- 3. I of the Vortex: From Neurons to Self**  
by Rodolfo Llinas, \$16.29