

31 December 2011 to 1 January 2012

VIPSI Conference in Sveti-Stefan, Montenegro



**A Happy New Year towards  
Our Splendid Space  
(Science mission possible:  
Our Dream will come true.)**

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Rudolf <sub>1</sub>XI



16,000 artificial neutrino has reached faster than the speed of light ! (Under confirmation.)

Geneva > about 730km > Gran Sasso



~ Gliese 581g ~

• Found in 2010

Gliese 581, located 20 light years away from Earth in the constellation Libra

The most Earth-like exoplanet yet discovered and the first strong case for a potentially habitable one.





Bare Electro-Dynamic (ED) Tape Tether is deployed successfully as scheduled in 120 sec and recorded the Length 132.6m in Space Deployment  
“The World Record of Tape-Tether Deployment”





Experiment of Bare Electrodynamic Tether –  
European/American/Japanese International Campaign-

## Relation with Future Project

**Next step** >>> a low cost LEO mission with an electrodynamic with a duration of two weeks or longer → increase/decrease orbit, supplier of electricity, spring-shot, and lifter for payloads.

Advantage of Space Tether : 1) Low cost, 2) Simple mission concept, and 3) Fast realization.

- \* de-orbiting of defunct satellites.
- \* Upboost of ISS
- \* Jupiter mission application, etc.



ETEX-A (JAXA), PropEI(NASA),  
BETs(ESA),

# Application of ED tether

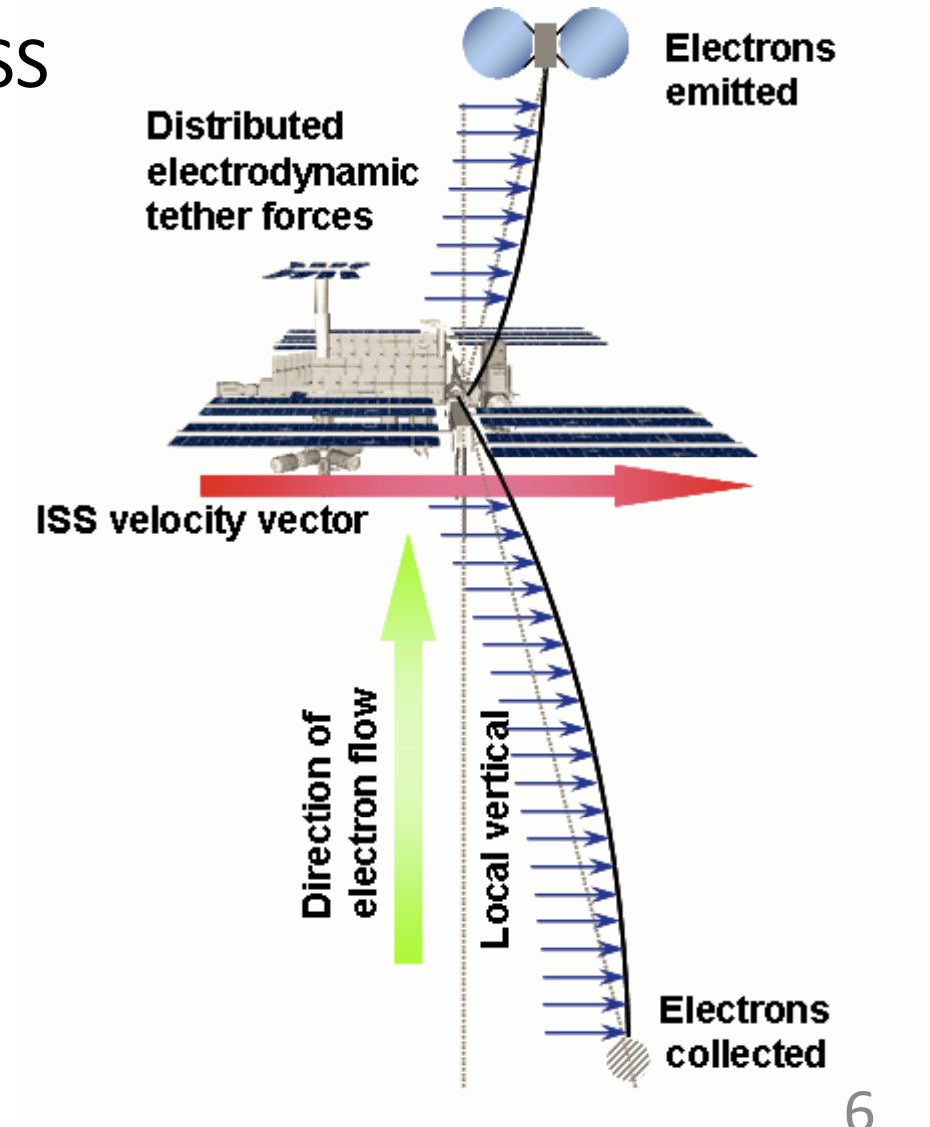
## Deboost defunct satellites

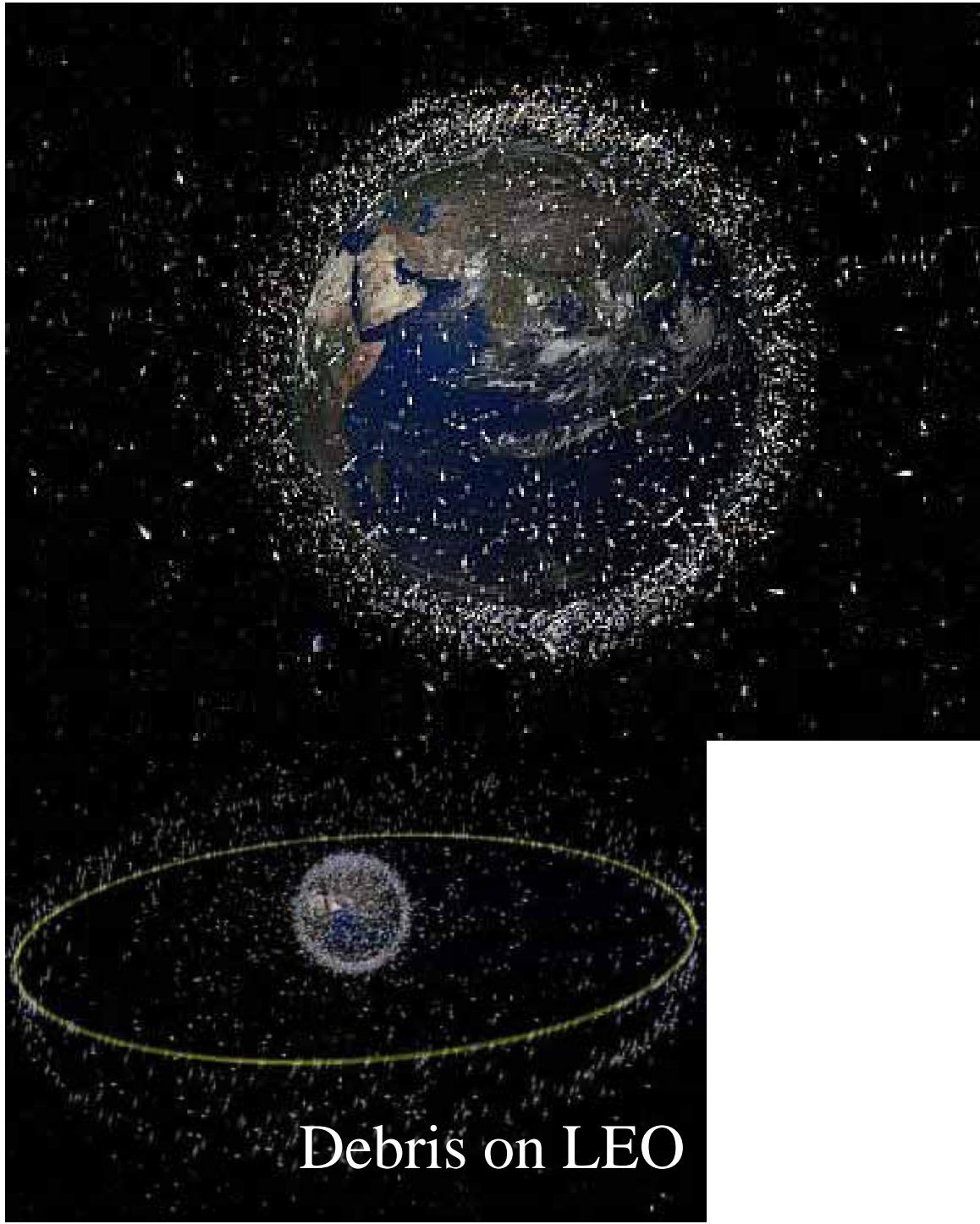
### Upboost ISS

Mechanical tether

Bare tether  
(collects electrons)

End-mass Cathode  
(emits electrons)





登録済みスペースデブリ (10cm以上) 約 15,000 個



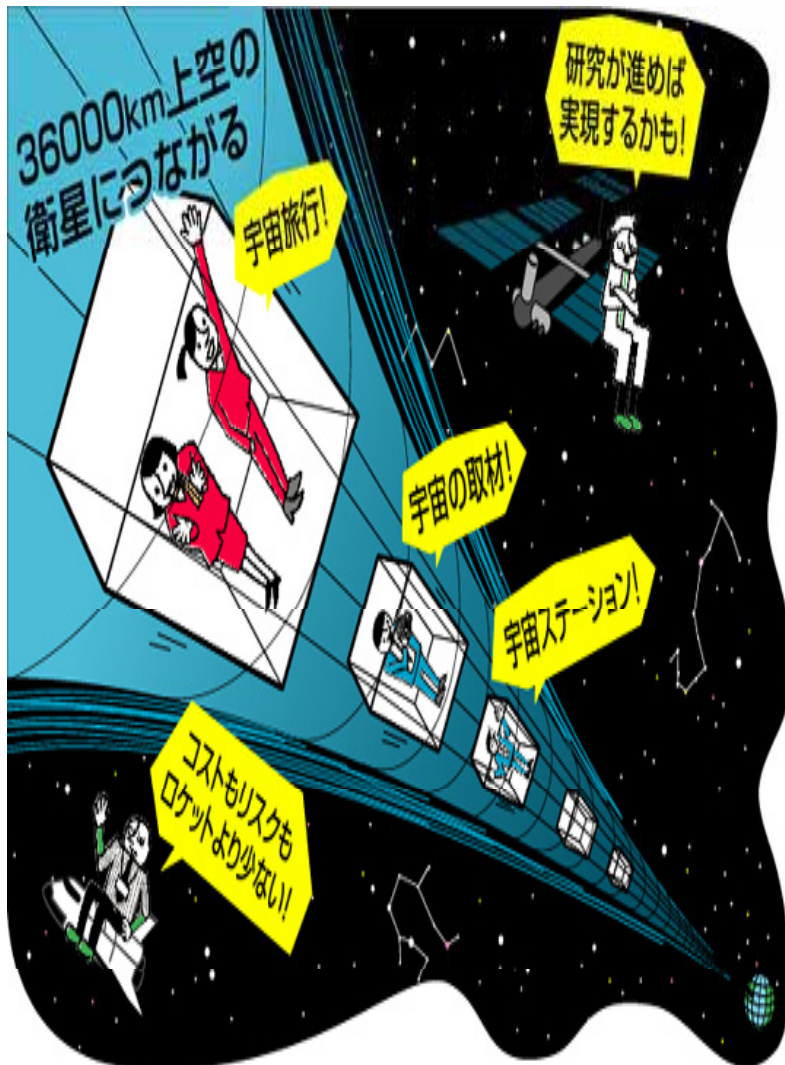
1 ~ 10cm のスペースデブリ 数十万個  
 1cm 以下のスペースデブリ 数百万個  
 (NASA の推定)







# How the space elevator works?

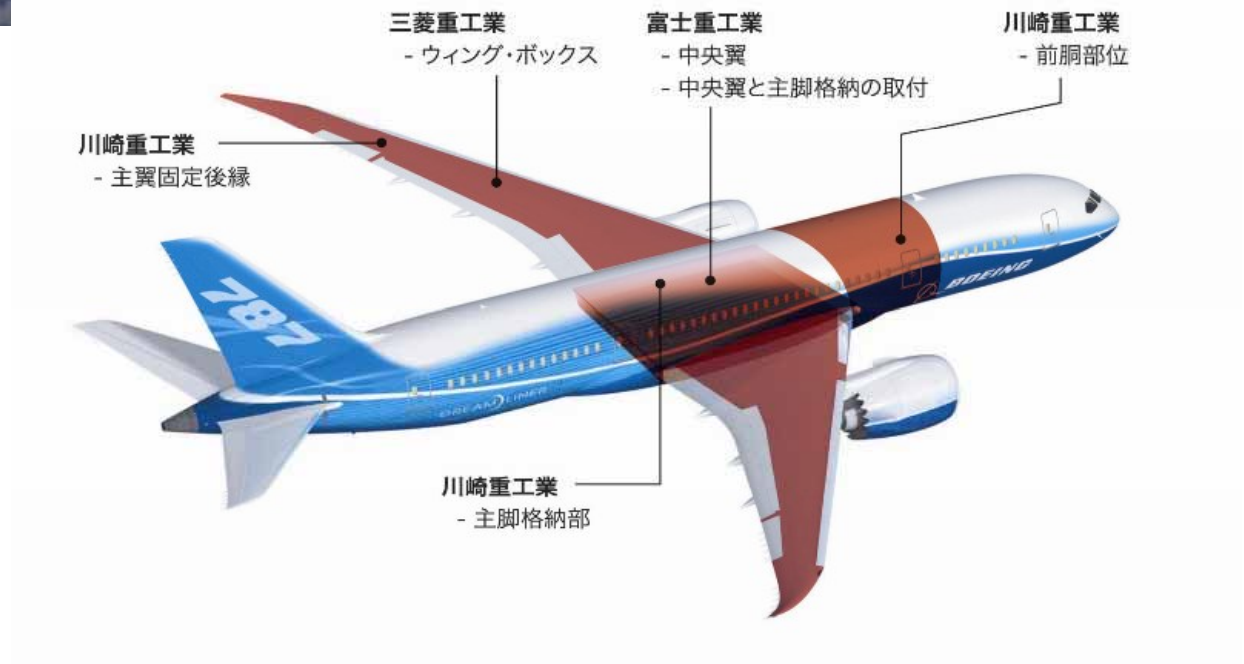


- Velocity 200[km/h]
- One week from the ground to GSO
- Several stations along the space elevator including an observatory
- More five days to the top of the elevator

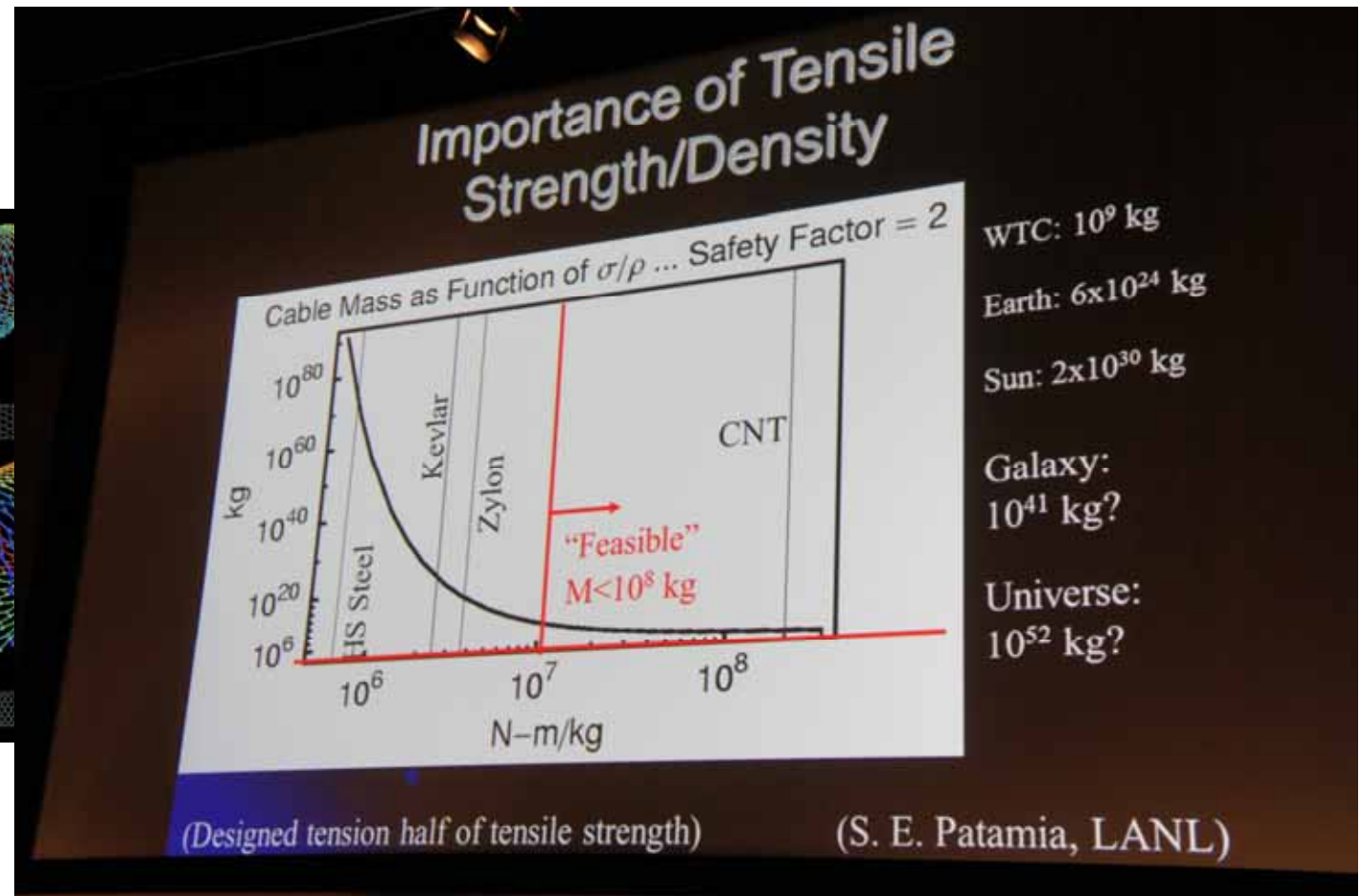
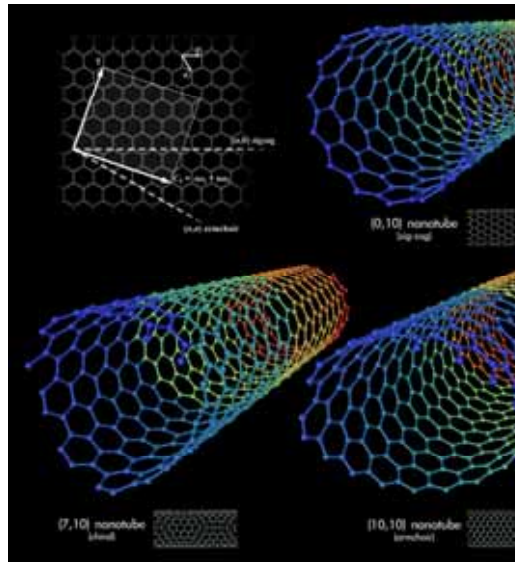
Boeing 787



# From metal to polymer



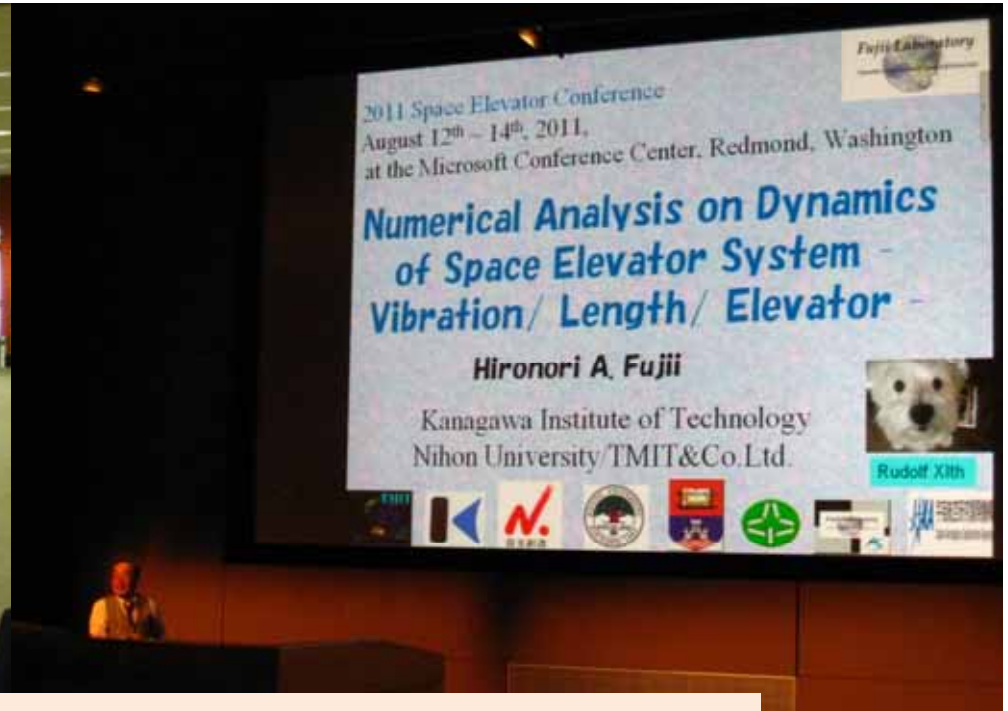
# Current High Strength Materials to Carbon Nanotubes (CNT)



(Current materials  $\rightarrow$  CNT)  $\approx$  (Stone age  $\rightarrow$  Steel age)

CNT technology (2009) > tubes up to a few tens of centimeters only

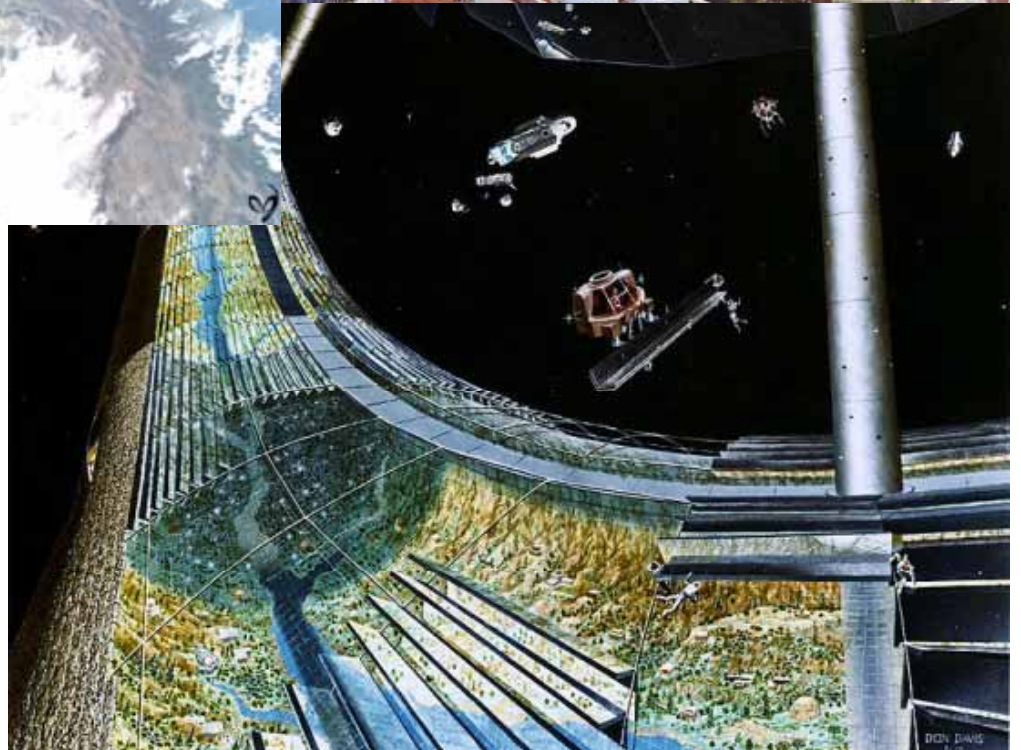
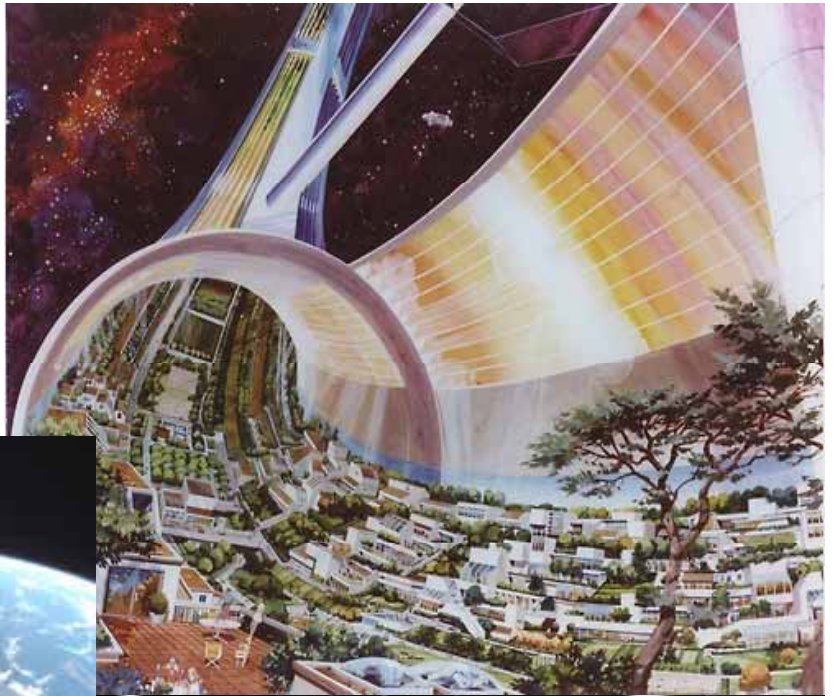
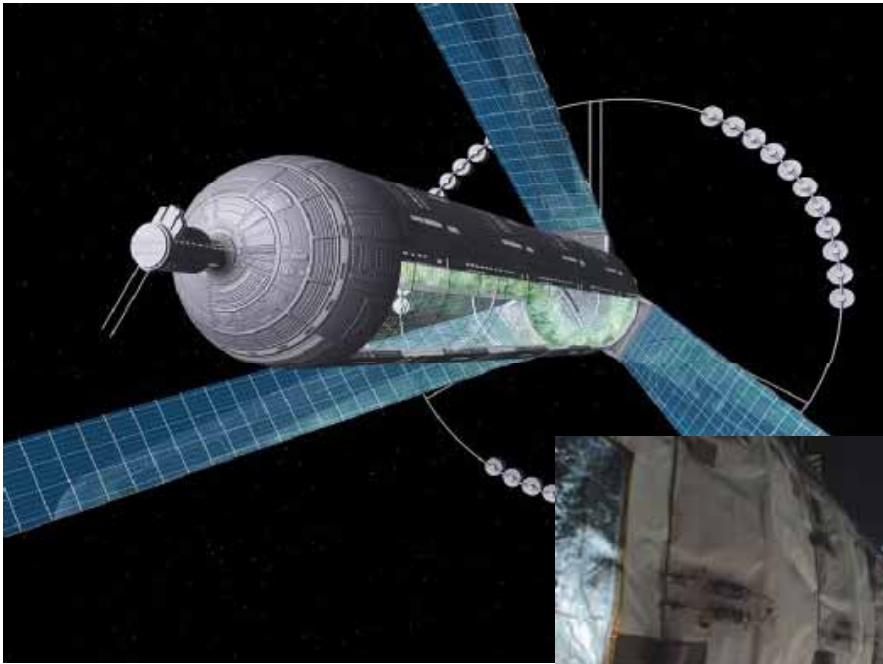


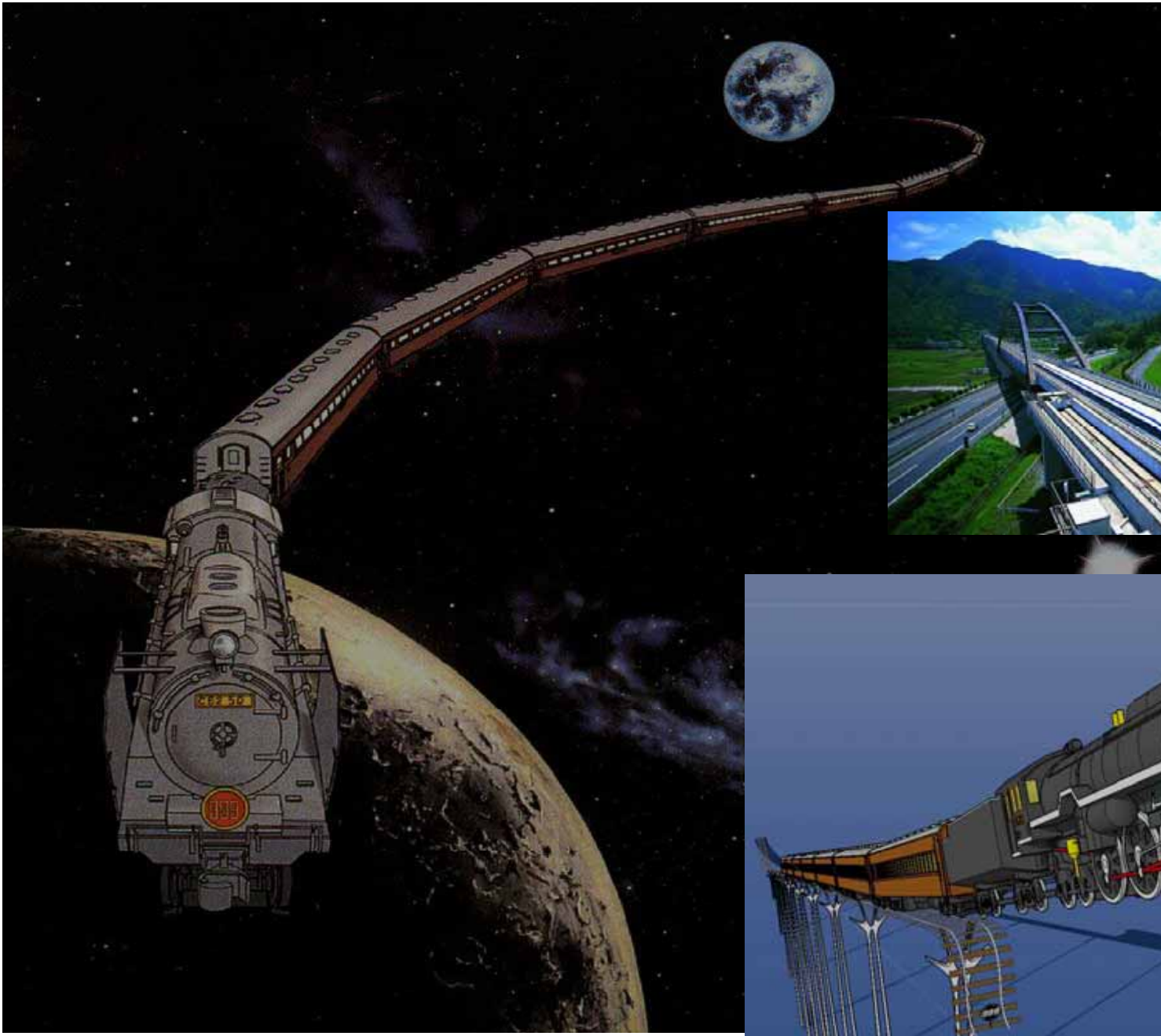


## Space Elevator Conference in USA (August 2011)











# Science Impossible!

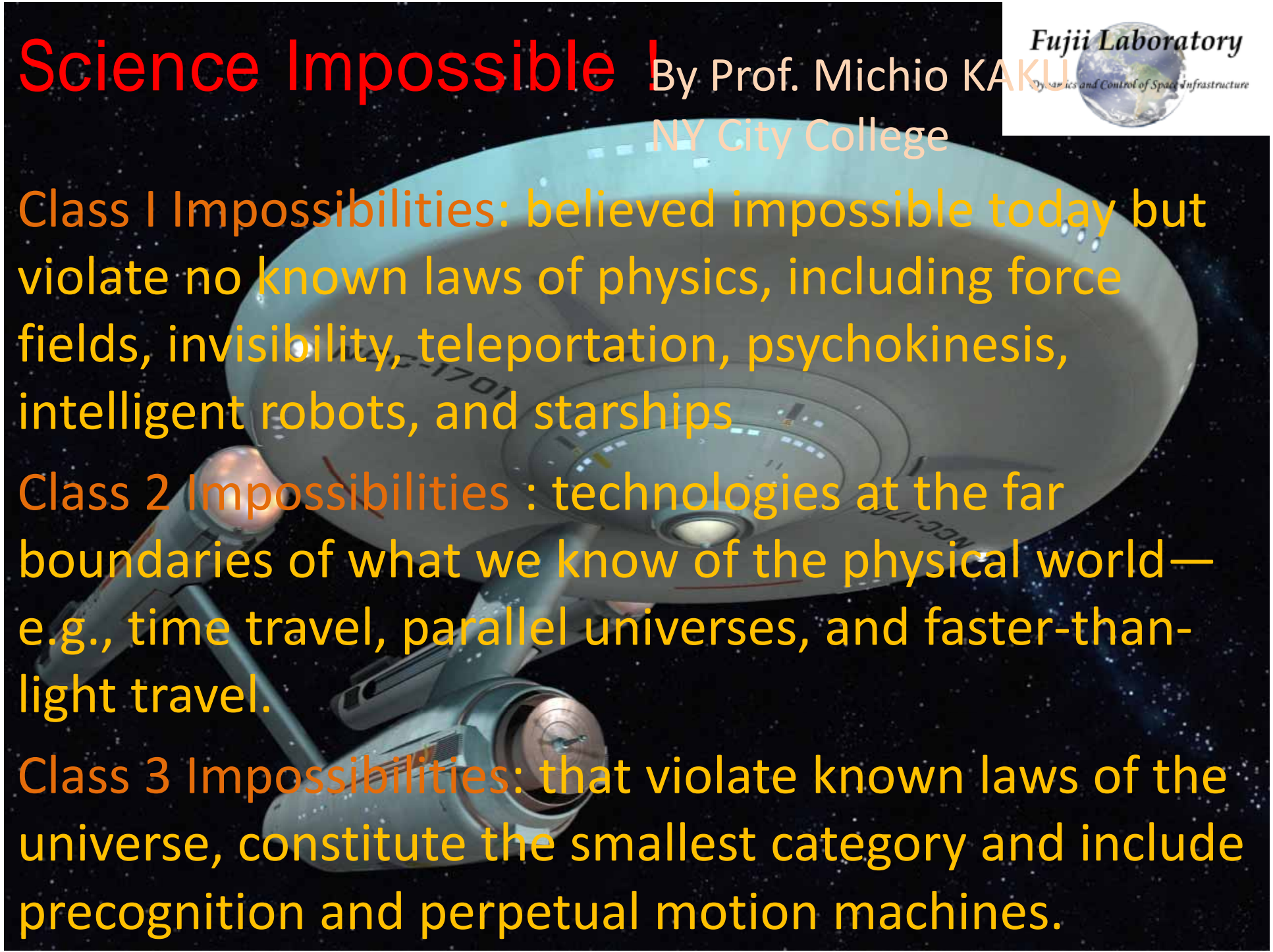
By Prof. Michio KAKU  
NY City College



Class 1 Impossibilities: believed impossible today but violate no known laws of physics, including force fields, invisibility, teleportation, psychokinesis, intelligent robots, and starships

Class 2 Impossibilities : technologies at the far boundaries of what we know of the physical world— e.g., time travel, parallel universes, and faster-than-light travel.

Class 3 Impossibilities: that violate known laws of the universe, constitute the smallest category and include precognition and perpetual motion machines.



# Bio-suit





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Splendid Space !

May good lives be in 2012  
and in future !

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2011 to 2012



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2011 to 2012

# *Fujii Laboratory*

*Dynamics and Control of Space Infrastructures*

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