



# Relaxed vortices: a hint of Tajima's visions of plasma physics

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Samuel Rocha de Oliveira (Unicamp - Brazil)

# The fluctuation-dissipation theorem

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- vortices may survive long enough?
- stationary solution?

# vortices in plasmas

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- Two-dimensional and three-dimensional solutions for an electron-positron-proton plasma.
- Ideal magnetohydrodynamic three-dimensional localized vortices.
- Possible **cosmological** implications are discussed.

# Learning from Tajima

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- "long" meetings at his office for paper and pencil estimates - almost every thing by heart
- tons of previous articles and references
- numerical computation - enormous FORTRAN code
- strong physics intuition
- almost 24k citations
- 29 papers, patents or talks in 2017
- open to collaboration
- theory, experiment and applications

# Further challenges

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## Gravitational Waves

A few answers and several new puzzles

## Primordial ...

Black holes, magnetic fields, dark matter

# Happy 70th birthday

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HAPPY BIRTHDAY and  
CONGRATULATIONS for all the achievements so far.  
Cheers,  
Sam