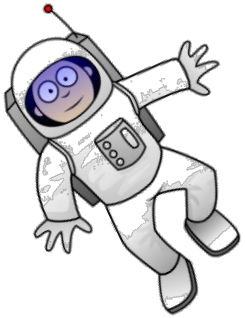
KM3NeT 2.0

The next generation neutrino telescope in the Mediterranean Sea

ESFRI roadmap 2016

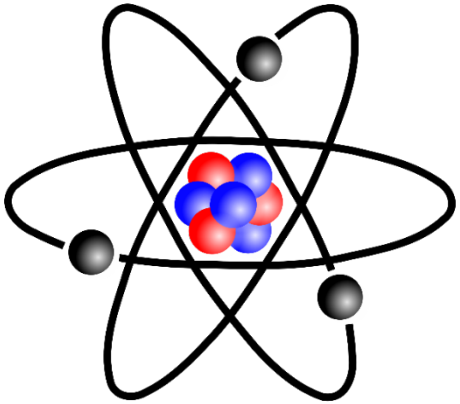
10 March 2016, Amsterdam, The Netherlands

Maarten de Jong



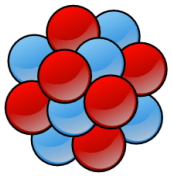
gravity

electro-magnetism



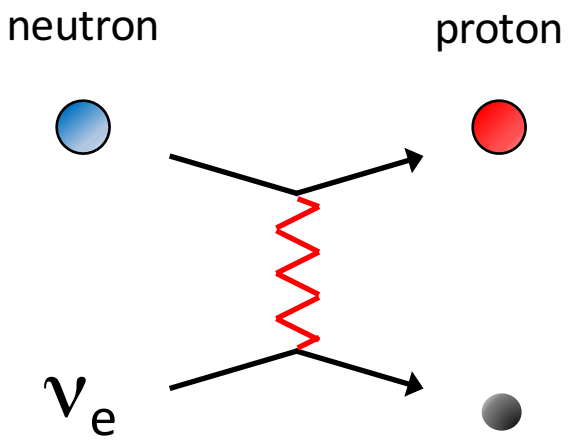
atom

strong interaction

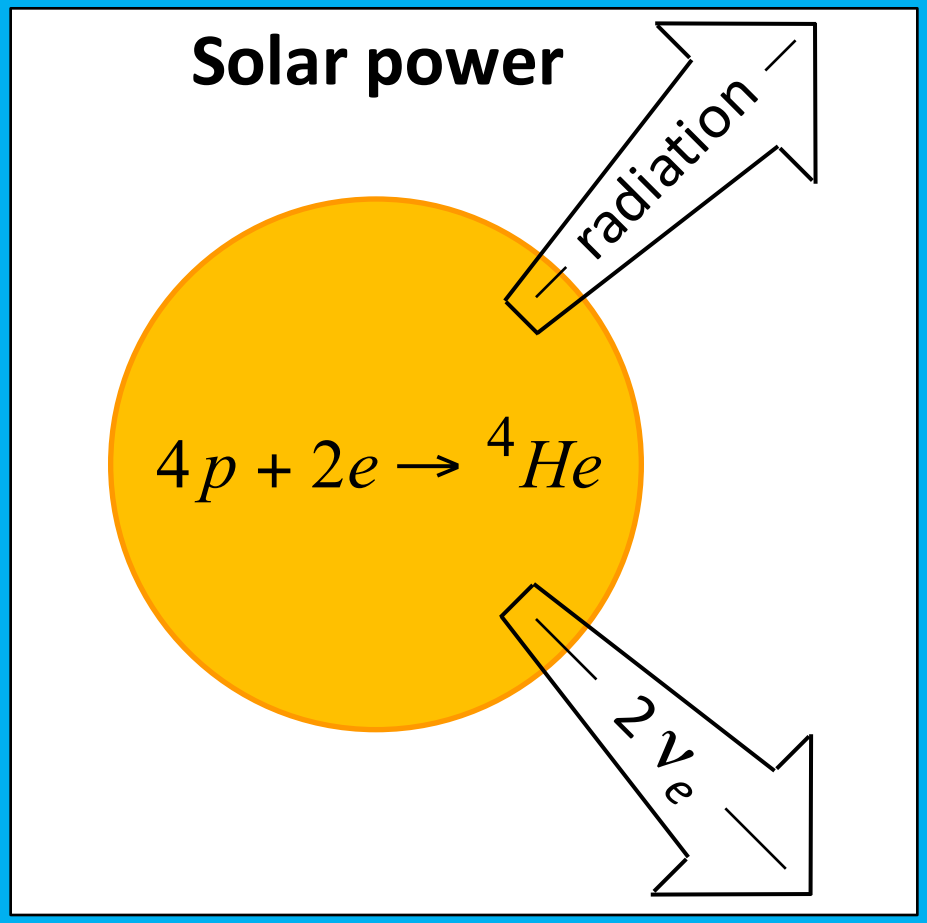


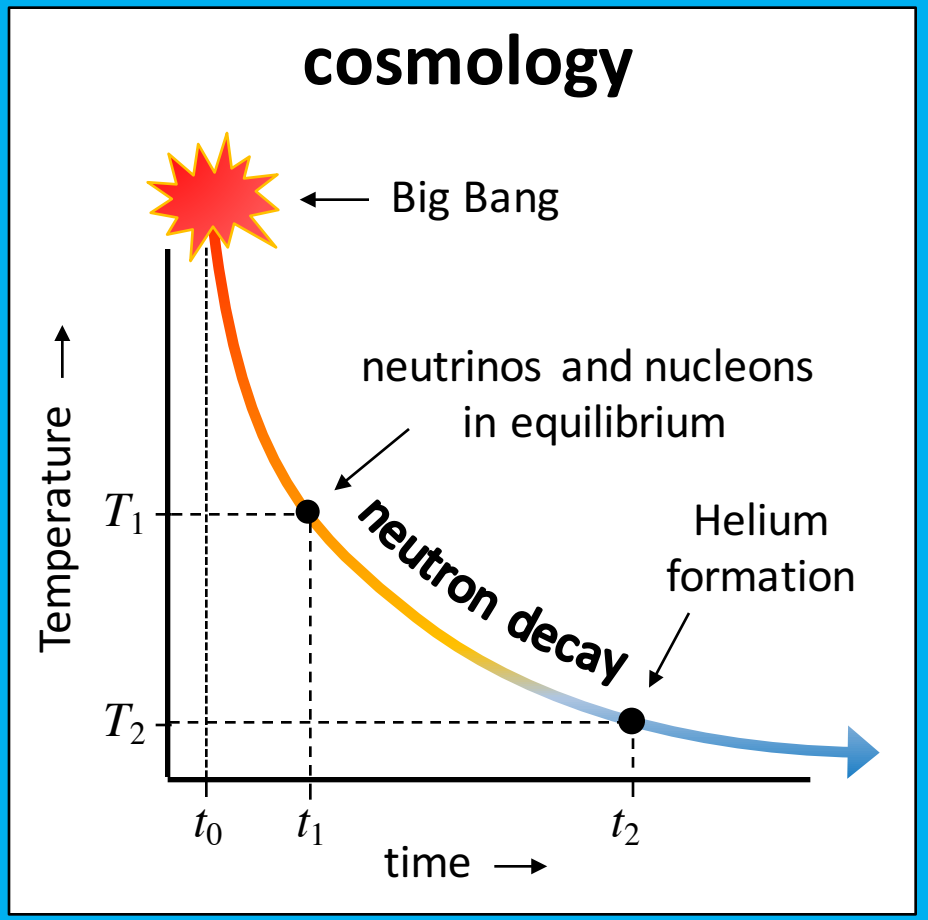
nucleus

weak interaction?



Weak interaction





See ½ solar neutrinos

⇩

Neutrino oscillations

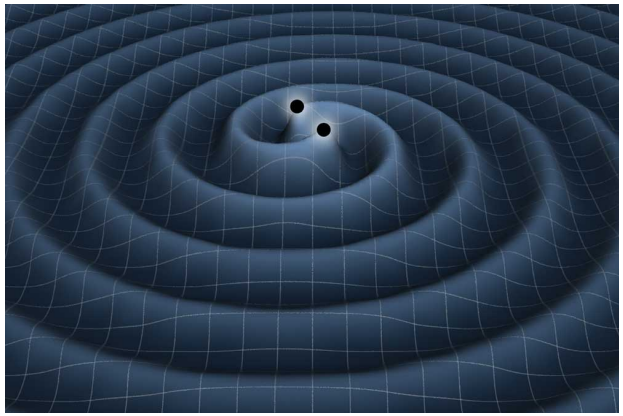
weak states = *"what you see"*

$$\begin{pmatrix} \varsigma_e \\ \varsigma_\mu \\ \varsigma_\tau \end{pmatrix} = U \times \begin{pmatrix} \varsigma_1 \\ \varsigma_2 \\ \varsigma_3 \end{pmatrix}$$

mass states = *"what you get"*

Nobel Prize in Physics 2015 was awarded jointly to
Takaaki Kajita and Arthur B. McDonald
"For the discovery of neutrino oscillations,
which shows that neutrinos have mass."

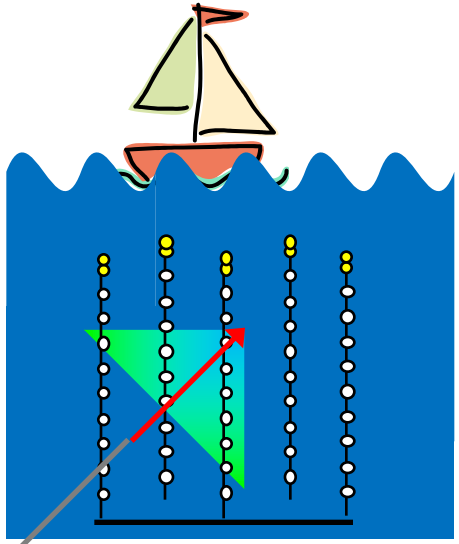
gravity



electro-magnetism

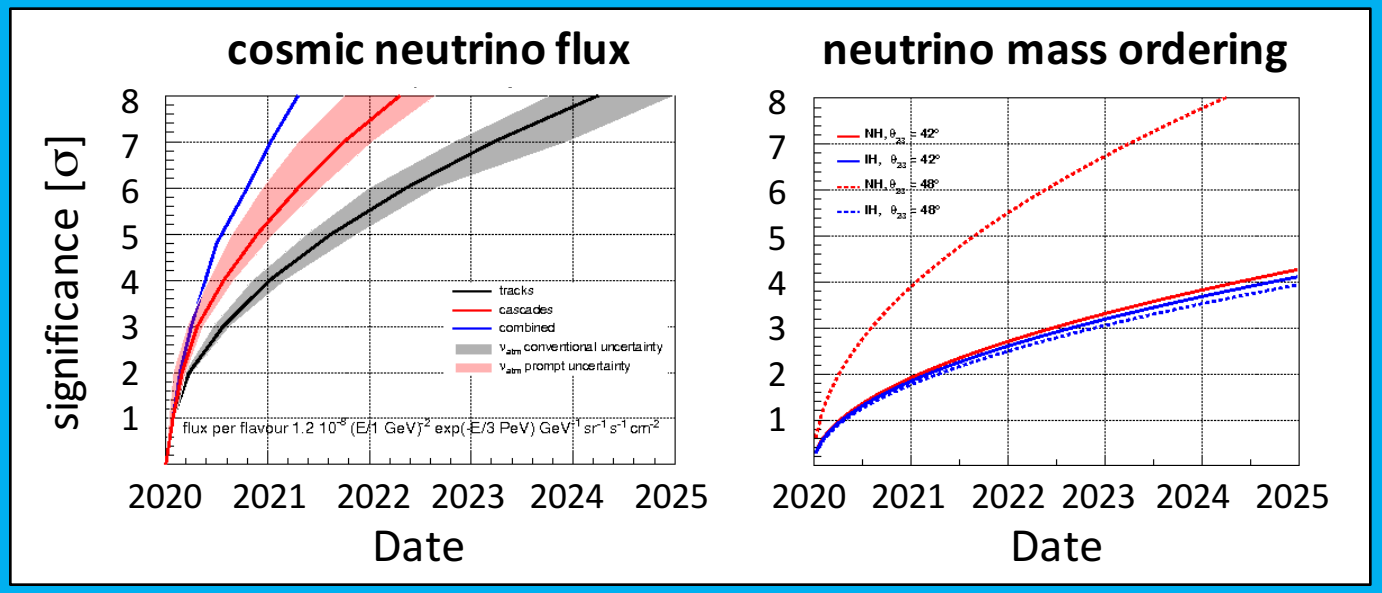
strong interaction

weak interaction?



KM3NeT 2.0 / primary goals

1. Discovery and subsequent observation of high-energy neutrino sources in the Universe
2. Determination of mass ordering of neutrinos
3. Synergies with Earth & Sea sciences



KM3NeT 2.0 / latest news

- First detection unit deployed *3 December 2015*
  - analyses of first data confirm all specifications
- New web site launched *26 January 2016*
  - news, press releases, cool movies, etc.
- Letter of Intent published *27 January 2016*
  - 150 pages: technology, physics, figures of merit, etc.
- MoU KM3NeT & Hyper-K signed *16 February 2016*
  - first joint workshop in 14 & 15 July, Amsterdam
- New groups joining KM3NeT *23 February 2016*
  - Morocco (2) and Spain (1)
  - interest from Australia, UK, …

Personal message:

"ESFRI review was maybe not easy but certainly beneficial."