

JRJC 2018 Summary (a personal point of vue)

Emmanuel Chauveau

October 19, 2018

WARNING : my communication difficulties - an example

WARNING : my communication difficulties - an example



COUSCOUS

WARNING : my communication difficulties - an example



couscous



wine exchange

WARNING : my communication difficulties - an example



couscous



wine exchange

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couscous



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wine exchange

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couscous



wine exchange



lost bet : open the gala

WARNING : my communication difficulties - an example



couscous



wine exchange

Micro dosimétrie des irradiations par microfaisceau
d'ions en utilisant les méthodes Monte Carlo

Eva TORFEH

Directeur de thèse: Philippe BARBERET
Group IRIBIO (Interactions Rayonnements Ionisants et Biologie)

université
BORDEAUX

CENBG

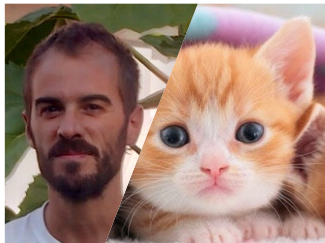
CIRIS
IN2P3
et CNRS

Eva's talk



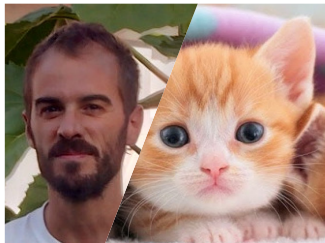
lost bet : open the gala

Logical plan of this summary



relation with cats

Logical plan of this summary

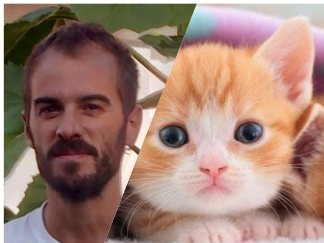


relation with cats



european legislation

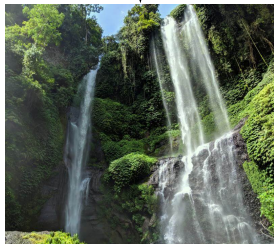
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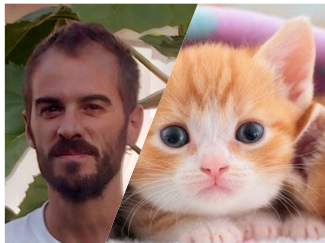


european legislation



cascade, elephant, ...

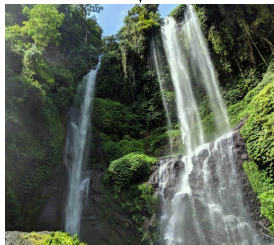
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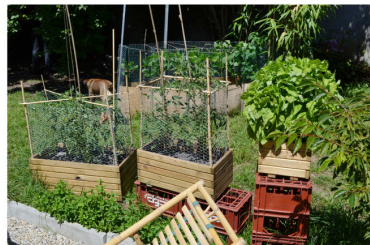
I ❤️ YOU





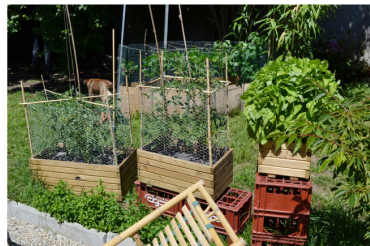



zero
waste






zero
waste



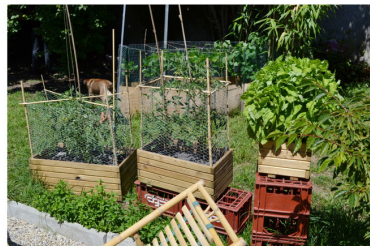



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waste



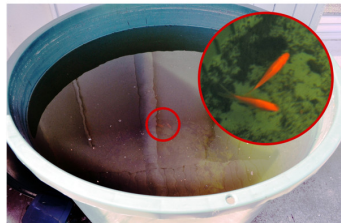
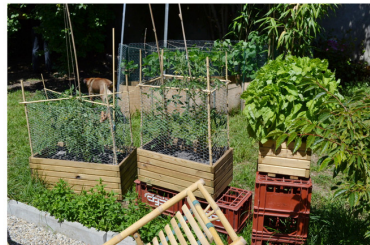



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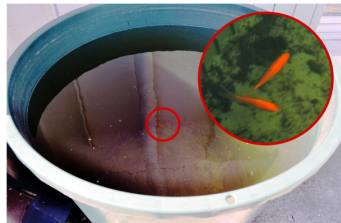



zero
waste





zero waste



My favorite cat videos



The video which make me change about cat ...



The video which make me change about cat ...



small change (ex: re-like cat) are important

Later : discussion between Pauline and Manu

Later : discussion between Pauline and Manu



Later : discussion between Pauline and Manu



Later : discussion between Pauline and Manu



Later : discussion between Pauline and Manu



European Ecolabel : what is it ?

- Eco-labels identify environmentally-friendly products and services

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Référentiel de certification du label
écologique de l'Union européenne



Hébergement touristique

Organe Certificateur :
AFNOR Certification
Siège social : 11 rue Franco de Preziosi
92071 La Plaine Saint-Denis Cedex
Téléphone : +33 (0) 1 41 62 90 00
Télécopie : +33 (0) 1 49 17 90 00
www.afnor.org
www.ecolabel.fr
www.ecolabel.eu

afnor
CERTIFICATION

Label écologique de l'Union européenne "Hébergement touristique"

SOMMAIRE

APPROBATION/REVISION DU REFERENTIEL DE CERTIFICATION.....	3
Partie 1 : OBJET ET CHAMP D'APPLICATION	4
1.1 SERVICES/GAMMES DE SERVICES CONCERNES	4
1.2 REGLEMENTATION ET TEXTES APPLICABLES	5
Partie 2 : CRITERES A RESPECTER, MODES DE PRELVE - EXIGENCES RELATIVES A LA QUALITE	6
2.1 LES CRITERES APPLICABLES AU PRODUIT / SERVICE ET MODES DE PRELVE	6
2.2 EXIGENCES RELATIVES A LA QUALITE	6
Partie 3 : OBTENIR LA CERTIFICATION : LES MODALITES D'ADMISSION	8
3.1 DEPT D'UN DOSSIER/DE DEMANDE DE CERTIFICATION	8
3.2 ETUDE DE RECEVABILITE	8
3.3 L'AUDIT DE L'HEBERGEMENT TOURISTIQUE	8
3.4 EVALUATION ET DECISION	9
3.5 DELAIS ENTRE CES ETAPES	10
3.6 CONTESTATION - APPEL	10
Partie 4 : VALORISER LA CERTIFICATION : LES MODALITES DE MARQUAGE	11
4.1 REPRODUCTION DU LOGO/TYPE SUR LE PRODUIT CERTIFIE	11
4.2 REPRODUCTION DU LOGO/TYPE ECOLABEL EUROPEEN SUR LA DOCUMENTATION ET DANS LA PUBLICITE	11
4.3 CONDITIONS DE DEMARQUAGE	12
4.4 MODELE DE MARQUAGE ECOLABEL EUROPEEN	12
Partie 5 : FAIRE VIVRE SA CERTIFICATION : LES MODALITES DE SUVI	13
5.1 MODALITES DE CONTROLE	13
5.2 EVALUATION ET DECISION	14
5.3 DECLARATION DES MODIFICATIONS	14
5.4 SUSPENSION / RETRAIT DE L'ECOLABEL EUROPEEN	15
Partie 6 : CONSTITUTION DU DOSSIER DE DEMANDE DE CERTIFICATION	16
6.1 TYPES DE DEMANDES	16
6.2 PRESENTATION DE LA DEMANDE	16
6.3 TABLEAU RECAPITULATIF DES PIECES A FOURNIR A AFNOR CERTIFICATION	17
Partie 7 : GLOSSAIRE/LENDUE	18
Annexe I : Décision (UE) 2017/175 DE LA COMMISSION du 25 janvier 2017	19
Annexe II : Documents supports transmis sur demande auprès d'AFNOR Certification	69
Annexe III : Dossier administratif	70
Annexe IV : Dossier technique	75

Ecolabel @ VVF Lège-Cap-Ferret



A “green” JRJC ?

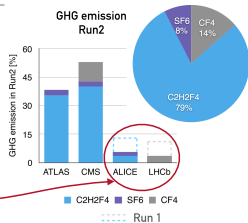
A "green" JRJC ?

MARA CORBETTA, IPNL&CERN

JRJC, OCTOBER 2018

CERN is taking steps to reduce their emission to avoid further damage to the environment and to limit the cost of Gas Systems

- ▶ Recuperation of exhaust Greenhouse gases
- ▶ R&D on Environmental Friendly Mixtures
- ▶ Operation of Gas Systems with Recirculation



6

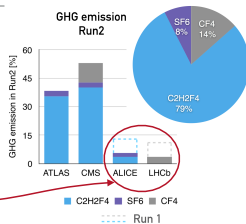
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JRJC, OCTOBER 2018



6

18/10/2018

Beyond the Standard Model

39

Observe new particles ?



Directly



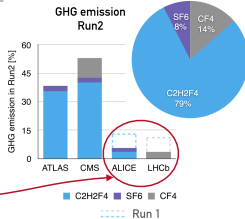
Indirectly



Now a BSM example

CERN is taking steps to reduce their emission to avoid further damage to the environment and to limit the cost of Gas Systems

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6

Observe new particles ?



Directly



Indirectly



Now a BSM example

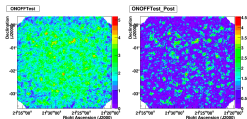
IV - Continuous surveillance

Extra Galactic Round Up :

Monthly analysis of all extra galactic data

2 Goals :

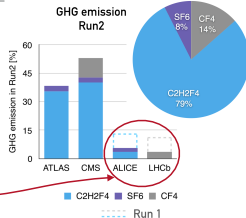
- Check if sources were active or variable
- Search for transients in the field of view



20 / 23

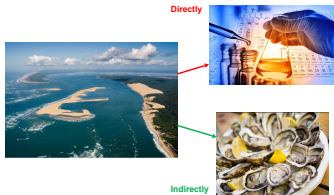
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6

Observe new particles ?



Now a BSM example

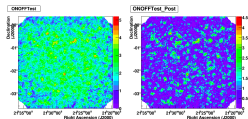
IV - Continuous surveillance

Extra Galactic Round Up :

Monthly analysis of all extra galactic data

2 Goals :

- Check if sources were active or variable
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20 / 23

⇒ beginning of my JRJC depression ...

... taking pictures ...



... watching/listening carefully ...



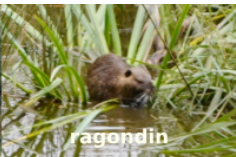
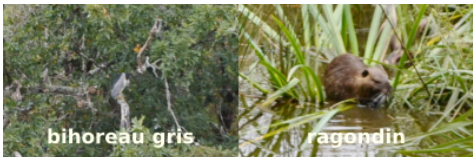
... taking the group pictures ...



... in the “reserve ornithologique” ...



... in the “reserve ornithologique” ...



... on "dune du Pyla" ...



... during oyster tasting ...



... listening again ...

Free scalar field

With the action

$$S = \int d^D x \sqrt{-g} \left(\frac{1}{2} \partial_\mu \phi \partial^\mu \phi - \frac{m^2}{2} \phi^2 \right)$$

We get the Klein Gordon equation $(-\square + m^2)\phi = 0$ where

$$\square = \frac{1}{a(\eta)} \left(-\partial_\eta^2 + \frac{d-1}{\eta} \partial_\eta + \partial_k^2 \right)$$

It gives for the mode decomposition of ϕ

$$\phi(\eta, \vec{x}) \sim \int \frac{d^d k}{(2\pi)^d} e^{i\vec{k}\cdot\vec{x}} H_\nu \left(\frac{k}{a(\eta)} \right) a_k$$

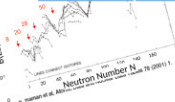
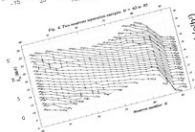
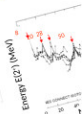
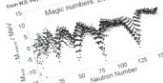
with $\nu = \sqrt{\frac{d^2}{4} - \frac{m^2}{H^2}} \approx \text{int}$

Free scalar field in de Sitter

Mode functions of the infrared modes of matter

Experimental evidence for shell structure

from W.B. Hoegem and R. J. Leander, Nucl. Phys. B61 (1969)



multiple stages PPAC
(Parallel Plate Avalanche Counter)

Conception of gaseous detectors ▶ sir

Characteristics and constraints

Moniteur faisceau

- ▶ Position of the beam
- ▶ Time reference
- ▶ Transparent to the beam
- ▶ Spatial resolution: below 100 μm

Downstream

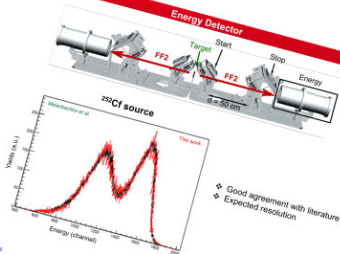
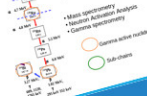
- ▶ Trajectories of t^-
- ▶ Large active area: $\sim 50 \times 50 \text{ cm}$
- ▶ Spatial resolution on one axis: below 500 μm
- ▶ Spatial resolution on the other axis: below 1 mm

II) Different kind of background noise

External Background mainly composed of gammas from:

- Neutron capture (6-10 MeV)
- Uranium & Thorium decay chain (4-6 MeV)
- Weak muon cosmic rays flux producing thermal neutron in rocks

- Internal Background:
- ^{208}Tl ium (2.6 MeV)
 - ^{214}Bi smuth (0.6, 1.12 & 1.76 MeV)
 - ^{226}Ra don



- ❖ Good agreement with literature
- ❖ Expected resolution

... listening again ...

Free scalar field
With the action

We present

It goes

with $v \ll c$

FIELDS

Characteristics and constraints

Moniteur faisceau

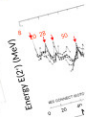
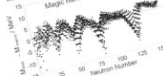
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Downsides

- Trajectories of t^+
- Large active area: $\sim 50 \times 50 \text{ cm}$
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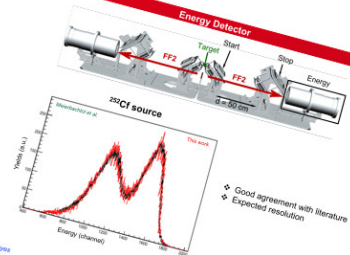
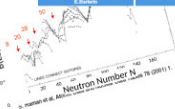
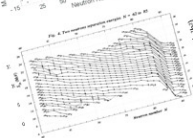
Experimental evidence for shell structure

from W.B. Hoegem and R. J. Sauerbrey, Nucl. Phys. B11 (1960)



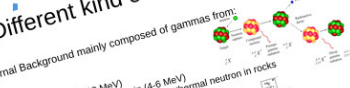
multiple stages PPAC
(Parallel Plate Avalanche Counter)

Conception of gaseous detectors ► sir



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 ^{222}Rn



... listening again ...

Free scalar field

With the action

We p

It g

with $v \propto \sqrt{\dots}$

Free scalar field in the limit

FIELDS

Characteristics and constraints

Moniteur faisceau

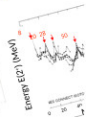
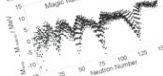
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Downstream

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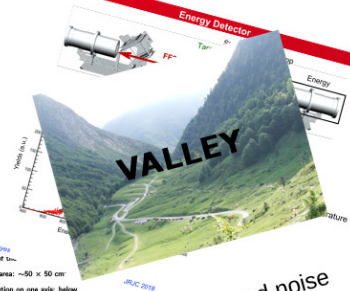
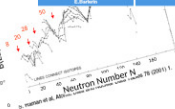
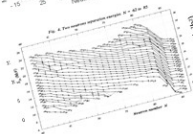
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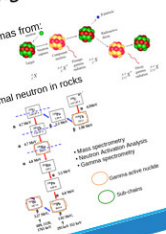
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 ^{220}Rn

... listening again ...

Free scalar field
With the action



We p

It g

with $v \ll v$

Free scalar field in the limit

of the infrared modes of order

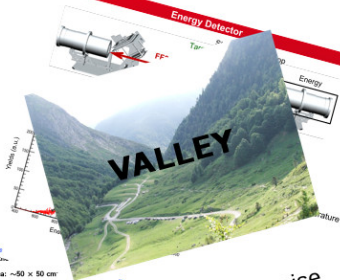
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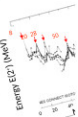
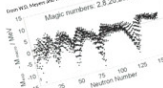
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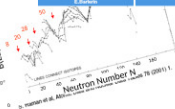
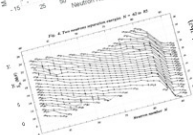
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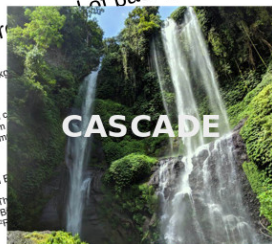


II) Different

External Back

Neutron c
Uranium
Weak m

Internal B



of background noise



Analysis
Quality

As a result of the
efficiency

Free scalar field

With the action

We pr

It g

with $v = \sqrt{\dots}$

Free scalar field in the limit

FIELDS

Characteristics and constraints

Moniteur faisceau

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Energy Detector



Energy

VALLEY



of background noise

Exp

ance for shell stru

Multiple stages PPAC (Particle Position Sensitive Counter)

gaseous detectors ▶ sir

PEAKS

(II) Differ

External Back

Neutron c
Uranium
Weak m

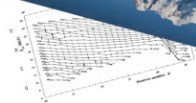
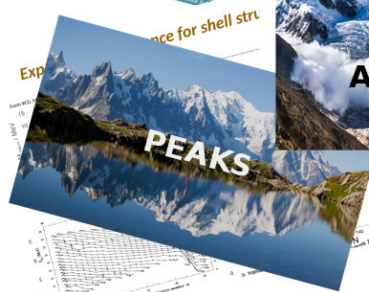
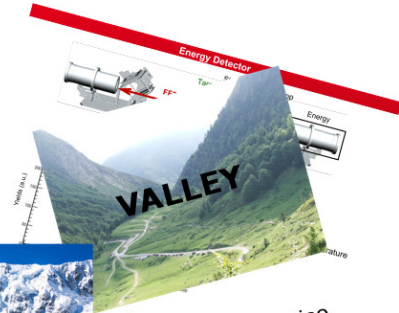
Internal B

CASCADE



Analysis
Quality
The latest results
... chains

... listening again ...



Internal E

2087T

214G

225P

Uranium

Weak m

Analysis

Quality

As before possible

Efficiency

... thinking on our daily life ...

ROOT

An Object-Oriented
Data Analysis Framework

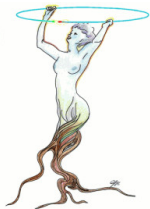


```
chauveau@lenovo: ~  
chauveau@lenovo:~$ root -l  
root [0] TTree a_tree ("toto", "");  
root [1] int i; a_tree.Branch("i", &i)  
(class TBranch*)0x1abf940  
root [2] a_tree.GetLeaf("i")  
(class TLeaf*)0x1ac0120  
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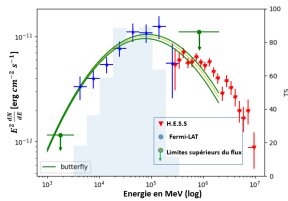
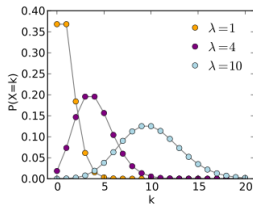
... thinking on our daily life ...

ROOT

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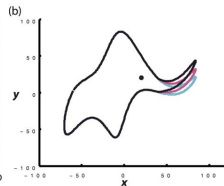
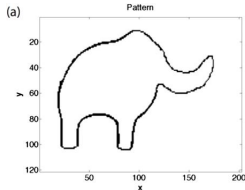
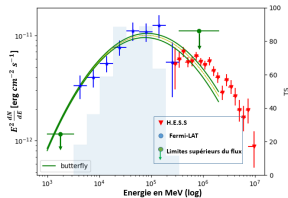
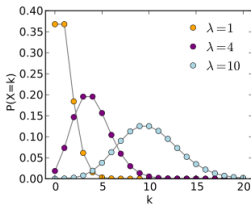


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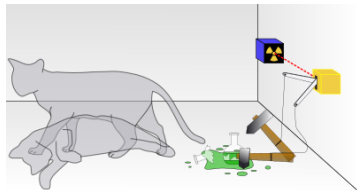
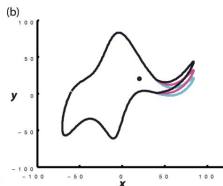
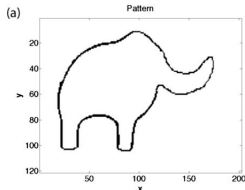
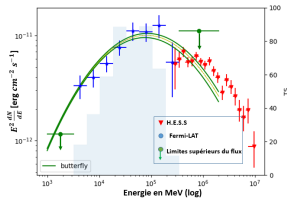
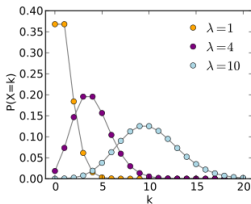


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.. even SFP is showing elephant !!



Toward a “green” research ?

**We are already “green” : → interested into nature,
viewing it in both infinites perspectives**

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of course, we are not perfect..

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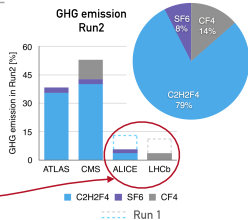
of course, we are not perfect..

MARA CORBETTA, IPNL&CERN

JRJC, OCTOBER 2018

**CERN is taking steps to reduce their emission
to avoid further damage to the environment
and to limit the cost of Gas Systems**

- ▶ Recuperation of exhaust Greenhouse gases
- ▶ R&D on Environmental Friendly Mixtures
- ▶ Operation of Gas Systems with Recirculation



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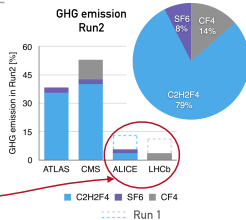
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6

but small change are already there ...

Thanks for your participation !

