

<https://www.bel-center.be/>

News from the BEL-CENTER



What is it?
What is it for?
When does it start?
Is there money?
How did we get there?



What is it?

*In the long term (3 years) a place for physicists to meet,
for now, a largely virtual institute.*

What is it for?

*A place to meet, discuss, have common seminars, invite
international guests, but also spend time on outreach, contacts
with other fields, relate to varied forms of art*

When does it start?

NOW!

Is there money?

Some, thks mostly to the Brussels Region

Where is it?

*It will be in the Tournay-Solvay “castle”, in a beautiful park,
nest to the Boistfort train station/
For now, it will be mostly virtual (in our institutions)*

How did we get there?

What can we do NOW?



How did we get there?

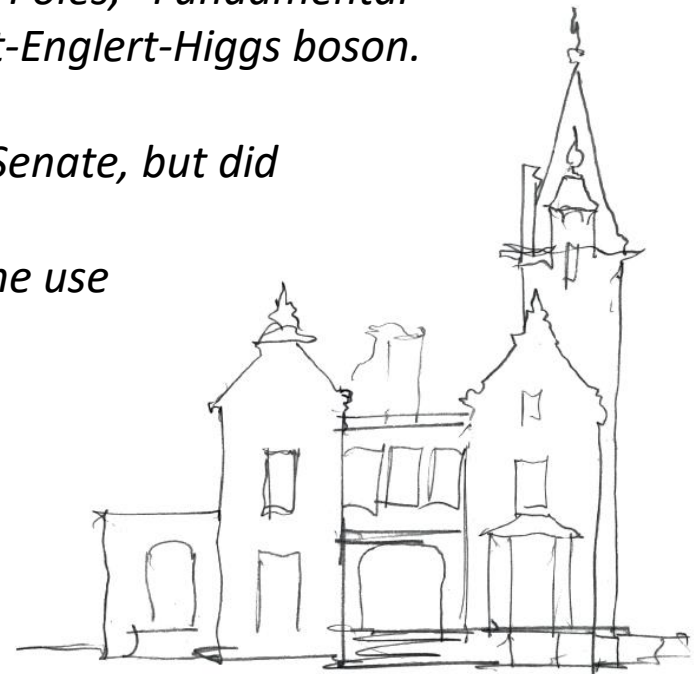
The purpose of the Brout-Englert-Lemaître Center is to continue the unifying and inspiring action of those outstanding Belgian scientists, and to help pool together the research groups in our field, but also to reach out to the public at large and to other domains of knowledge or art.

Starts with theoretical physics.

The idea started inside the Inter-University Attraction Poles, “Fundamental Interactions” at the time of the discovery of the Brout-Englert-Higgs boson.

It was encouraged by a motion voted by the Belgian Senate, but did not receive federal funding.

The Brussels region moved in, and basically offered the use of a beautiful (but currently under repair) castle, and promised some financial help to run it.



**In practice, what is available NOW?
(for 2021-2022, approx. numbers)**

- | | |
|--|------|
| • Money for 3 common seminars series | 10k€ |
| • International invitations | 18k€ |
| • Connection to Art (exhibitions, ...) | 4k€ |
| • Outreach | 3k€ |

3 seminar series :

- * Theoretical theory (deductive approach)*
- * Pheno-inspired theory (inductive approach)*
- * Cosmo*



What is the BEL-Center association?

It is a non-profit association under Belgian law, founded by the 4 universities associated to Brout Englert and Lemaître (KULeuven, ULB, UCLouvain, VUB).

It is managed by their delegates in the Board of Administrators, currently

Jean-Marie Frère (chair)

Piet Van Duppen (treasurer)

Fabio Maltoni (secretary)

Ben Craps (vice-chair)

A scientific committee advises the association,

It is currently chaired by

Antoine Van Proeyen



How nice is the castle, What is this story about bats?



For the moment, quite bad: it burnt many years ago,
but construction has started this year ...we also have to take care not to scare
away the **BATS** (the park is a protected area) .

What to do NOW?

- **Organize the seminar series**, (some money for food available!)
(need at least an academic in charge of each for long term + management by postdocs)
- The Scientific committee is considering invitations of foreign scientists (1 month)
and **can certainly use suggestions**
- **Organize “Outreach + Art”**
one possibility is an exhibition of pictures (photos related to science and to B,E,L)
on the grids around the castle, and to promote
- **“walks in the parc”** : informal meetings on week-ends with the general public
and volunteer scientists.



From the “non-Hubble” constant and the “non-Higgs” boson to the BEL-Center.

The BEL-Center does not only celebrate 3 outstanding scientists, but also 3 personalities who acted to bring together the Belgian (and to some extent the world) community.

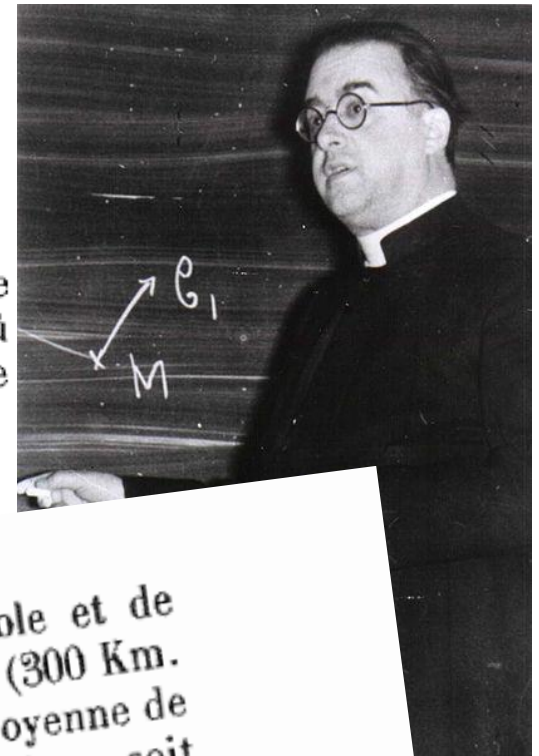


UN UNIVERS HOMOGÈNE DE MASSE CONSTANTE ET DE RAYON CROISSANT,
 RENDANT COMPTE
 DE LA VITESSE RADIALE DES NÉBULEUSES EXTRA-GALACTIQUES

Note de M. l'Abbé G. LEMAÎTRE

1. GÉNÉRALITÉS.

La théorie de la relativité fait prévoir l'existence d'un univers homogène où non seulement la répartition de la matière est uniforme, mais où toutes les positions de l'espace sont équivalentes, il n'y a pas de centre de



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Utilisant les 42 nébuleuses figurant dans les listes de Hubble et de Strömberg ⁽¹⁾, et tenant compte de la vitesse propre du soleil (300 Km. dans la direction $\alpha = 315^\circ$, $\delta = 62^\circ$), on trouve une distance moyenne de 0,95 millions de parsecs et une vitesse radiale de 600 Km./sec, soit 625 Km./sec à 10^6 parsecs ⁽²⁾.

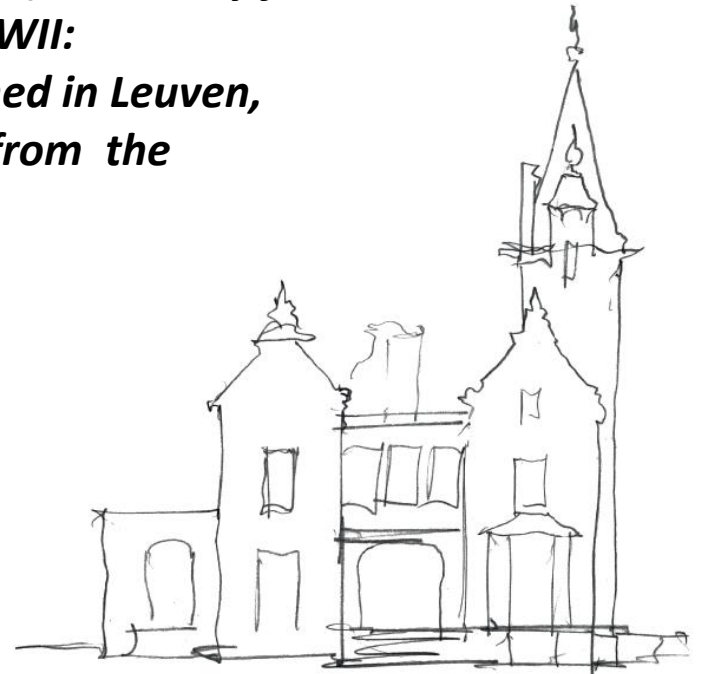
Nous adopterons donc

$$\frac{R'}{R} = \frac{v}{rc} = \frac{625 \times 10^5}{10^6 \times 3,08 \times 10^{18} \times 3 \times 10^{10}} = 0,68 \times 10^{-27} \text{ cm}^{-1} \quad (24)$$

What became the Hubble law, before being recently renamed Lemaître-Hubble

By establishing an expanding Universe, in agreement, not only with General Relativity, but also with an interpretation of astrophysical observations, Georges Lemaître appears as one of the fathers of observational cosmology: **the history of the Universe can now be observed!**

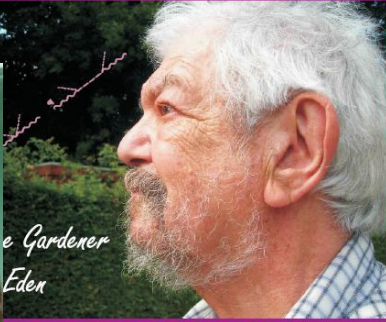
Lemaître had a very international career, and maintained contacts with DeDonder (theorist) , Cox (astronomer and Rector) and many friends at ULB; Moreover, his openness showed once more during WWII: not only were students from the (closed) ULB welcomed in Leuven, but Mgr Lemaître he insisted that they be exempted from the religion courses.



(Thks to Prof. Dominique Lambert for these historical elements)



Solstice d'Hiver alc 9% (vol.) 75 cl




Robert Brout

Eden

Cuvée Robert Brout 2012

Bière artisanale refermentée en bouteille
Brosserie de Silleux S.A. B-6630
Consommer de préférence avant fin 2015



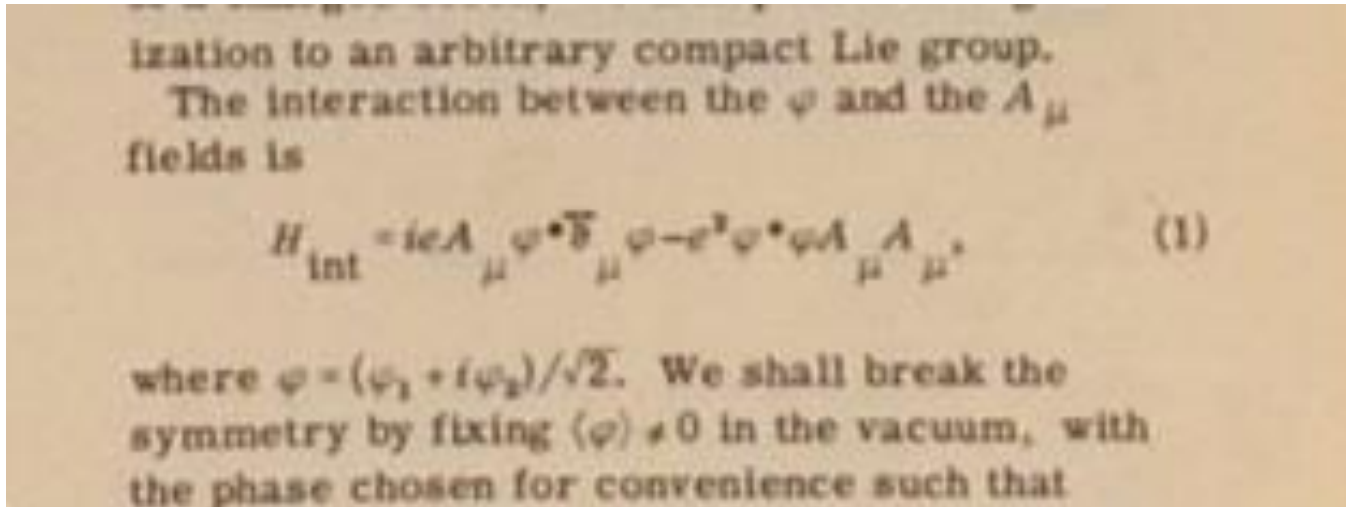
Some (...) say it is difficult to find the scalar boson in this first paper...



Let us look closer ...

... we need to go all the way to

Equation 1 of this very shot paper



Not only the mechanism, the mass of the gauge bosons, but also the scalar boson (which of course was called φ and not Higgs ...) are there...

Here also, the role of Robert Brout and François Englert extended beyond their scientific contributions (including in cosmology) to cementing our community.

I was obviously not around in 1964, but in the early 70's, when suddenly the Standard Model became accepted, few physicists knew the tools... (the dominant theory hinged around the S matrix approach rather than quantum fields)... We learnt together tricks like dimensional regularization, but also the cosmological aspects.



This was the start of itinerant seminars, where we drove (sometimes dangerously*) from campus to campus to work together on those new views.

Of course, this led to the idea of the BEL-Center.

** don't write Feynman diagrams on the foggy windscreen when driving a 2cv...*

