



# MISSION CONTROL CENTER

## « HOME »

ENGLISH INSTRUCTION MANUAL  
PARTICLE DETECTOR "MAIA"  
MANUAL OVERRIDE

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# LUNAR STATION







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This exhaustive manual covers all the procedures to use while in contact with LUNAR STATION "EXILE".

5 advices in crisis situation:

- keep a low and calm voice,
- listen while keeping a critical sense,
  - give clear instructions,
  - check if they are understood,
  - repeat as many times as necessary.

Every mistake from MISSION CONTROL CENTER "HOME" represents a danger for astronauts and the mission.

Not  
visible  
particles  
are  
detected





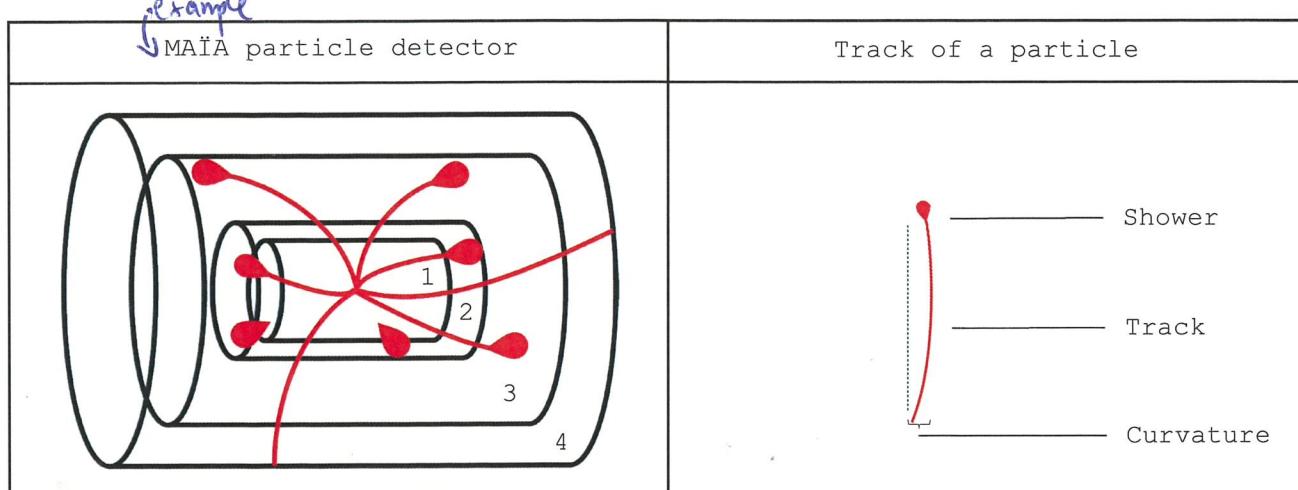
## 1. « HARD DRIVE FAILURE » OR « CORRUPTED DATA » ERROR

The emergency system will suggest to use the function Manual override, to manually complete the corrupt data.

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### 1.1 Manual override

This function triggers a holographic visualization in 3 dimensions of the MAÏA particle detector on the HoloDash.



- #1 Identify the number of particles observed by the astronaut with the tracks of each particle depending on the layer where the shower ends, according to each row of this table. Take notes.

Layers :

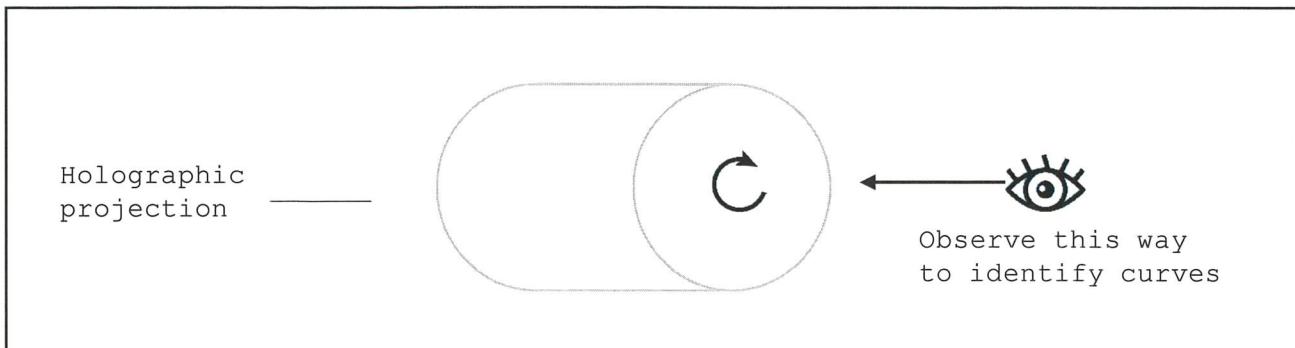
	1	2	3	4
Layers :	Tracking chamber	Electromagnetic calorimeter	Hadron calorimeter	Muon chamber
Electron ( $e$ )				
Photon ( $\gamma$ )				
Quarks ( $q$ )				
Muon ( $\mu$ )				
Neutrino ( $\nu$ )				
Central interaction → towards the outer layers				



- #2 Once you have identified the number of each particle, identify their electrical charge with the curvature of their track. Take notes.

Obviously, except  $\gamma$  and  $\nu$  that have a neutral charge.

The symbol  (clockwise) on a side of the hologramme indicates that particles observed from this side whose curvature turns in this direction have a positive charge. Otherwise, they have negative charge.



- #3 Use your notes. Ask the astronaut to enter each particle identified, with the correct electrical charge, on the computer.

Success will be indicated on Screen 1. Otherwise, further analysis will ensue.

If further analysis is required, use the risky procedure of Advanced Manual Override and hope for the best.



Be careful!  
EXILE computers are not  
designed for such analyse  
⇒ overheating risks!



## WHAT MANUAL TO USE FOR WHAT ERROR

### **ERROR: ARTIFICIAL MICROBIOTIC STOMACH 10GER**

The 10GER experiment is a level 3 priority for LUNAR STATION "EXILE".

See specific manual or contact Dr. Rémy Bourcelain.

### **ERROR: PRISONER ALPHA TUBEX**

The PAT experiment is highest priority level for LUNAR STATION "EXILE".

~~Please avoid to push the red button at any cost. Rather launch auto-destruction of LUNAR STATION "EXILE" and contact General Hammond.~~

### **ERROR: MAÏA PARTICLE DETECTOR**

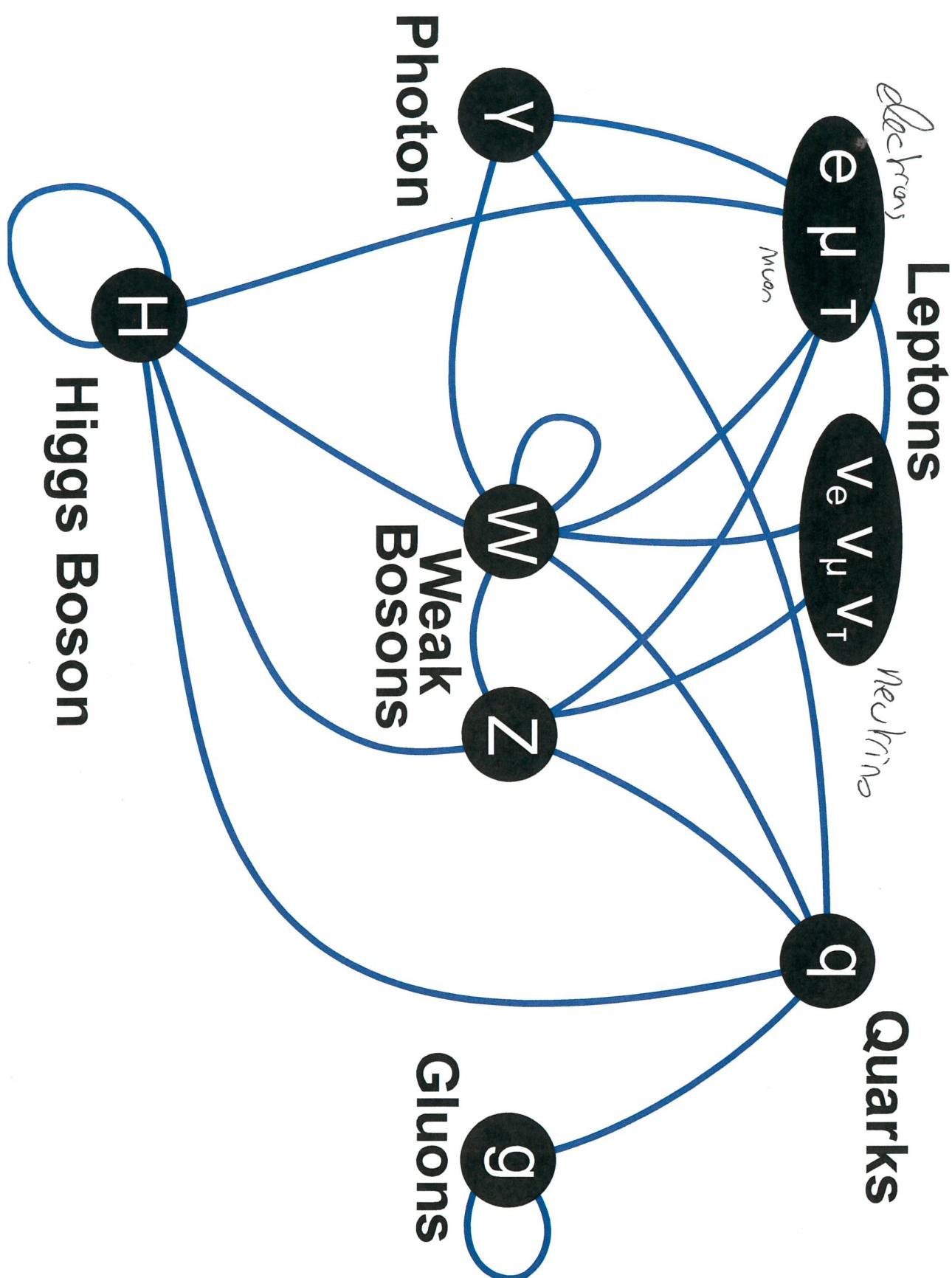
The MAÏA experiment is a level 1 priority for LUNAR STATION "EXILE".

Check the correct manual depending on the error the astronaut reads:

Error on Screen 1	Use this manual	Pages
« Hard drive failure »	MAIA particle detector Manual Override	All
	MAIA particle detector Mechanical reparation	71 to 236

MANUAL  
OVERRIDE

06 03



# MISSION CONTROL CENTER

## « HOME »

ENGLISH INSTRUCTION MANUAL  
PARTICLE DETECTOR "MAIA"  
ADVANCED MANUAL OVERRIDE



PREPARED BY GL180630  
UNIVERSITÉ

LUNA



EXI

DO NOT  
USE UNLESS  
MANUAL OVERRIDE  
FAILED

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- listen while keeping a critical sense,
- give clear instructions,
- check if they are understood,
- repeat as many times as necessary.

Every mistake from MISSION CONTROL CENTER "HOME" represents a danger for astronauts and the mission.

Slowly and  
calmly explain  
each step!

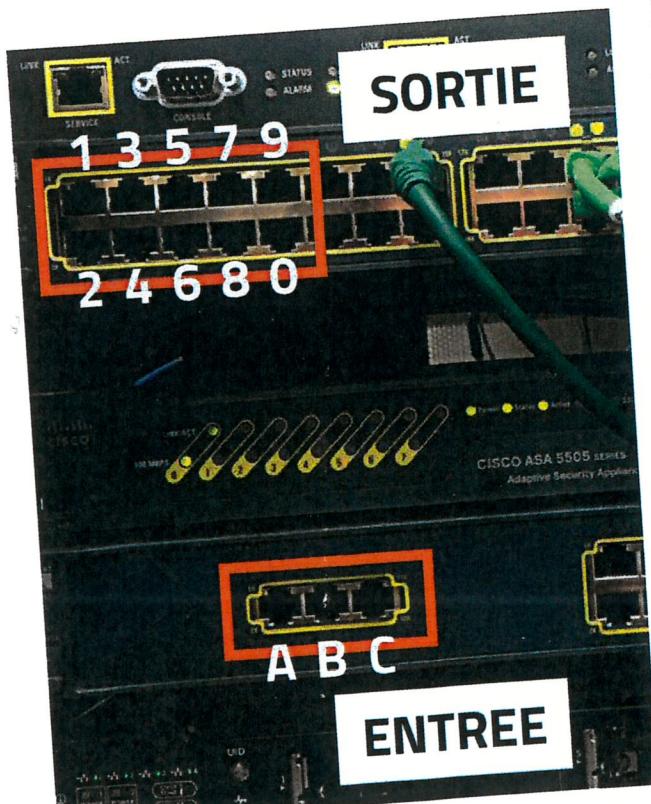
## Emergency procedure of « ADVANCED MANUAL OVERRIDE »

If EXILE computers could not detect all particles interactions, the HoloDash should display all the possible interactions in the form of holographic *Feynman diagrams* (cf. memo p. 5).

The astronaut must sort out the diagrams to find the only one that fits all the 2 following criteria.

1. Identify the Feynman diagram with the correct outcoming particles (exit).

2. Identify the Feynman diagrams with the correct initial interaction (entry), which depends of the following cable setup:



- WHERE? → the wiring diagram should be written under one of the working desk of the Eile emergency room.
- i. A is for the hundreds
  - ii. B is for the tens
  - iii. C is for the units
  - iv. The connections gives the value of the Beam index (next page).
  - v. Example: A2-B2-C4 is a Beam index of 224, a gluon fusion.

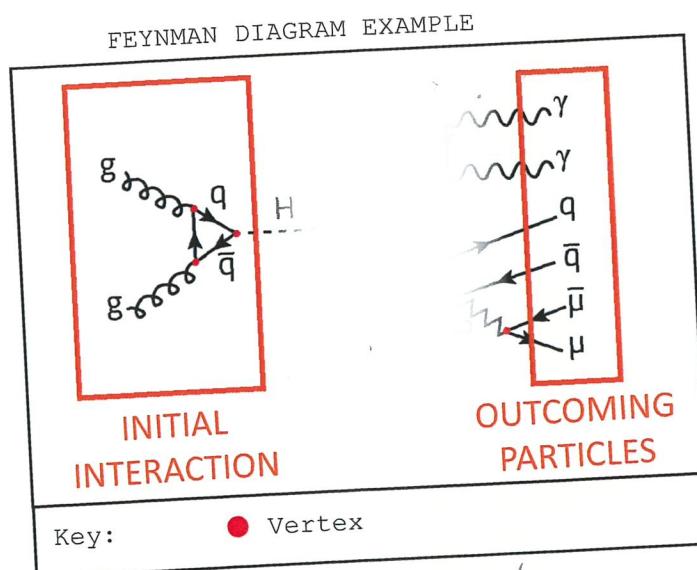
- 3 If there are more than one Feynman diagram left, with the correct particles emitted and the correct initial interaction: then choose the most fundamental one (cf. memo below).

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### MEMO: FEYNMAN DIAGRAMS (in case of advanced manual override)

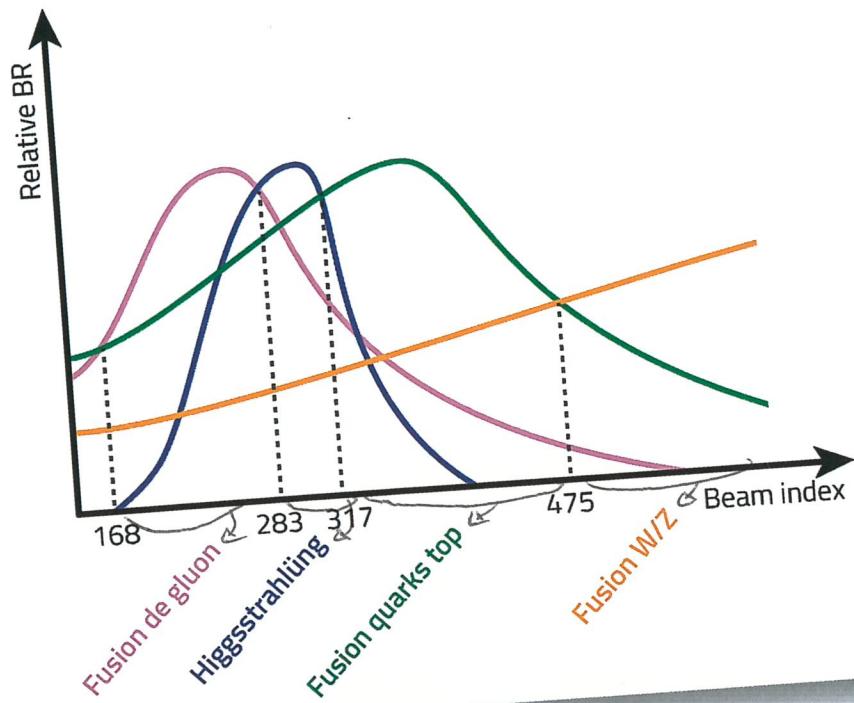
Feynman's diagrams visually depicts the interactions between particles.

The diagrams can be complex but there are always an initial interaction (on the far left) and outgoing particles (on the far right).



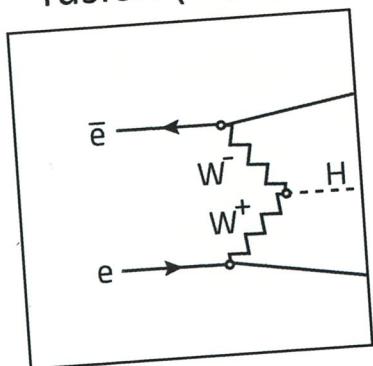
The most fundamental diagram  
is the one with  
less vertices.

Use this graph to identify what interaction you are searching for:

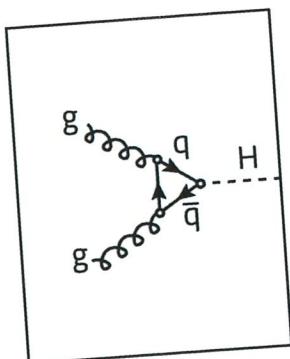


The corresponding Feynman diagrams will look like this:

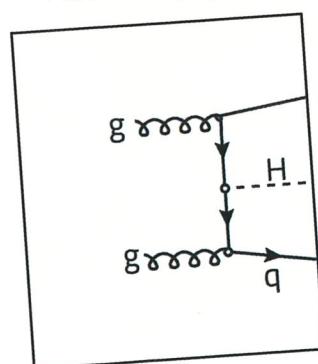
Vector bosons fusion (W/Z)



Gluon fusion (g)



Quark top fusion (q)



Higgs Strahlung

