

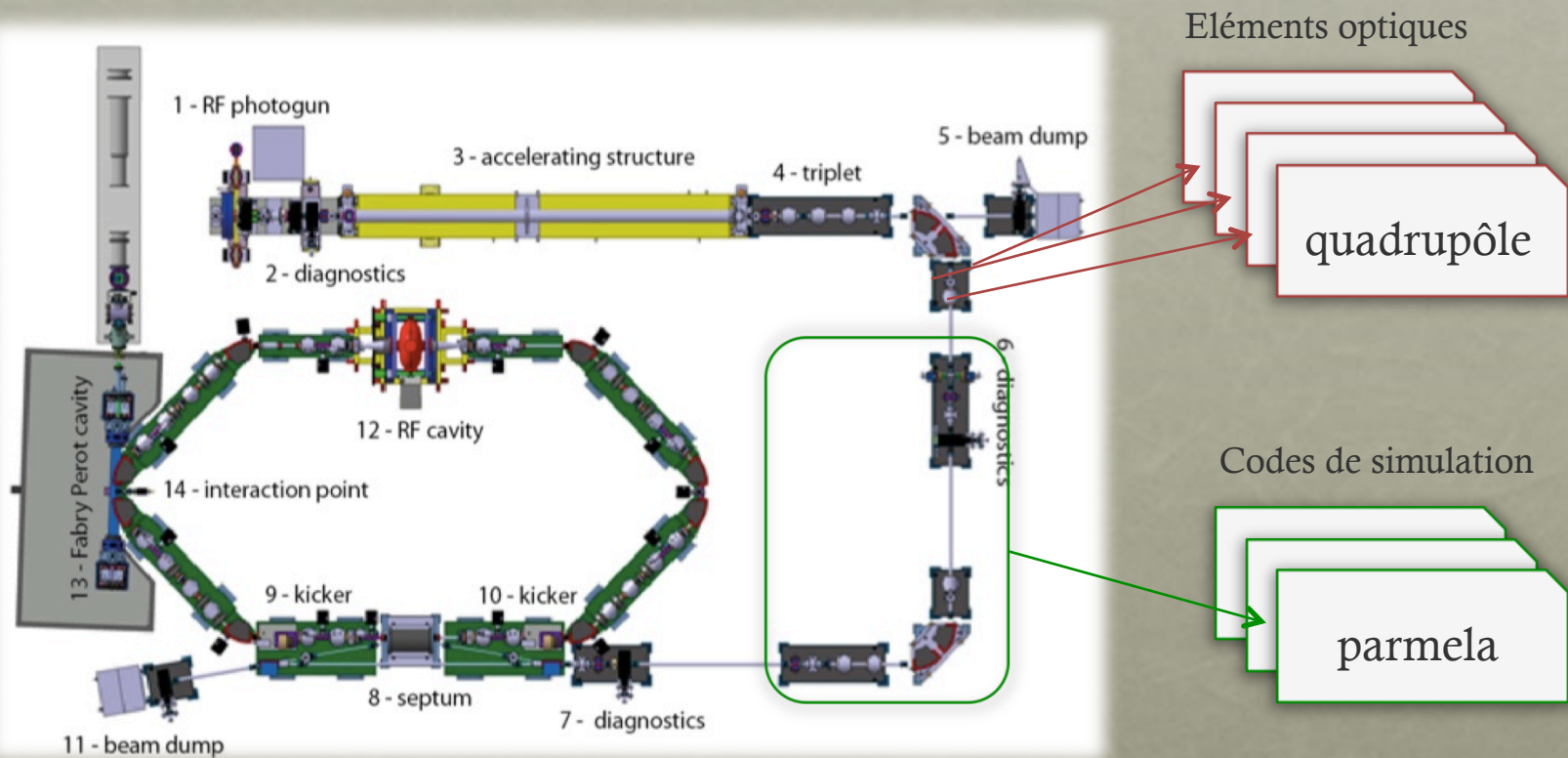
PSPA : UNE PLATEFORME DE SIMULATION EN PHYSIQUE DES ACCÉLÉRATEURS

<http://groups.lal.in2p3.fr/pspa/>

Les journées informatique de l'IN2P3-IRFU
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PSPA : UNE PLATEFORME DE SIMULATION EN PHYSIQUE DES ACCÉLÉRATEURS (I)



PSPA : UNE PLATEFORME DE SIMULATION EN PHYSIQUE DES ACCÉLÉRATEURS (II)

Un ensemble important de logiciels de conception de machines :

- ① dispersion des codes dans différents laboratoires
- ② multiplicité de versions d'un même code
- ③ dépendances des environnements informatiques
- ④ manque de publicité et de documentations

PSPA : UNE PLATEFORME DE SIMULATION EN PHYSIQUE DES ACCÉLÉRATEURS (III)

Un outil de simulation accessible à partir du WEB

PSPA : UNE PLATEFORME DE SIMULATION EN PHYSIQUE DES ACCÉLÉRATEURS (IV)

The image shows a web browser window titled "portail PSPA" with the address bar containing "0.0.0.0:8077". The browser interface includes a "Lecteur" (Reader) button and a download icon. Below the browser is a desktop environment with a toolbar containing icons for a folder, a star, a folder, and a trash can. A vertical toolbar on the left side of the application contains icons for "RF gun", a target, a red box, a white box, a grid, a red circle, a blue circle, a hand, a green star, a green star, and a red "W".

The main workspace is divided into two primary views:

- Global view:** This view shows a top bar labeled "my accelerator" with icons for settings, a red triangle, a play button, and a bar chart. Below this, a "Global view" tab is active, displaying a diagram of an accelerator component labeled "sector 1". The component has a "Type: Linear" dropdown menu. A dashed box below the component contains the text "Drag elements here....".
- Computing view:** This view is currently inactive. It features a gear icon and a button labeled "init/expand machine". Below this is a section labeled "Computing blocks" with a horizontal scrollbar.

At the bottom of the interface is an "output" panel with a "Search" input field and a large text area for displaying simulation results.

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Construire interactivement une machine

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The screenshot displays the PSPA simulation platform interface within a web browser window titled "portail PSPA : philFit.aml". The browser address bar shows "0.0.0.0:8077". The interface is organized into several sections:

- Global view:** Shows a top-level view of the accelerator layout. A "sector 1" label is visible above a detailed view of the sector.
- Computing view:** Provides a detailed view of the sector's components. The "Type" is set to "Linear". The components are arranged in a sequence: rfgun01, cell01, drift01, soleno01, drift02, bend01, and drift03.
- Computing blocks:** A section for defining simulation blocks. It includes an "init/expand machine" button and a "Computing blocks" area with "from" and "to" dropdown menus. The "from" menu is set to "rfgun01" and the "to" menu is set to "drift03".

A vertical toolbar on the left side of the interface contains various icons for navigation and simulation control, including a hand cursor, a magnifying glass, and a refresh icon.

output

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**Définir les traitements des processus physiques à
appliquer sur les différentes sections de la machine**

PSPA : UNE PLATEFORME DE SIMULATION EN PHYSIQUE DES ACCÉLÉRATEURS (VIII)

The screenshot displays the PSPA simulation platform interface. At the top, a browser window shows the URL "portail PSPA : philFit.aml" and the IP address "0.0.0.0:8077". The main interface is divided into several sections:

- Global view:** Shows a high-level overview of the accelerator configuration. A red arrow points to a blue play button icon in the top toolbar.
- Computing view:** Shows a detailed view of the accelerator configuration. The configuration is labeled "my accelerator" and "sector 1". The "Type" is set to "Linear". The configuration includes the following components: rfgun01, cell01, drift01, soleno01, drift02, bend01, and drift03.
- Computing blocks:** Shows the configuration of the computing blocks. The "init/expand machine" button is visible. The configuration is as follows:

from	to	block	+	-
rfgun01	drift01	parmela	+	-
soleno01	drift03	transport	+	-

The "output" section is visible at the bottom left of the interface.

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Lancer l'exécution
Analyse des résultats produits

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The screenshot displays the PSPA simulation platform interface. The main window shows a global view of an accelerator layout with components: rfgun01, cell01, drift01, soleno01, and drift03. Two data windows are open:

- histogramme (Mon Oct 6 14:59:32 2014)**:
case : pspa
after element : drift01
entries : 501
mean : -0.00311566 MeV
sigma rms : 18.2639 KeV
The plot shows a histogram of kinetic energy with the x-axis labeled $dE_{cin}/E_{cin} (%)$ ranging from -0.200 to 0.200 and the y-axis from 0 to 40.
- phase space (Mon Oct 6 14:59:06 2014)**:
case : pspa
after element : drift01
emittance x, x' : 1.82085 pi. mm . mrad
x max= 3.46679 mm
x' max= 0.552101 mrad
The plot shows phase space rms with the x-axis labeled xp ranging from -4.000 to 4.000 and the y-axis from -0.6 to 0.6. A red ellipse highlights the distribution.

The interface includes a toolbar with icons for RF gun, Global view, Computing view, and various simulation controls. The Computing blocks section at the bottom shows connections between components:

from :	to :	Block
rfgun01	drift01	parmela
soleno01	drift03	transport

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- langage C++
- librairie Wt pour développer l'interface graphique web
- gestion des versions du code avec Mercurial
- description et gestion du code avec CMT
- un serveur Jenkins exécute de manière continue la construction du code
- site web réalisé avec le logiciel WordPress
- format XML pour décrire les données (AML)