LHC Optics Web for V6.500

- **New easy-to-remember shortcut:**
  - http://**cern.ch/lhcoptics**
  - Or via LHC home page ("Lattice and Optics" link):

- V6.500 in construction
- "Collision" case prototype

Changes in process – not yet visible on Web

- **New version of main page**
  - Shorter, with links to new documentation pages
  - Clearer explanation of hierarchy
  - Clarifications of table formats
- **New configuration pages**
  - Includes "early", "ions", …
  - More example MAD files ("sample jobs")
- **New table content (requested by experiments)**
  - HKICK and VKICK values
  - DPY values
  - Aperture at ends of elements
  - Spreadsheet version have more information and functionality than the original TFS files from MAD

New explanation of hierarchy

Organizational Hierarchy

The data is organized in a hierarchy as follows:

Optics Version

> The version of the LHC optics (e.g., V6.5) corresponding to a defined layout of the machine components.

Configuration

> For each Optics Version there are several states of the LHC for which an optics exists (e.g. Injection). This is defined not only by the power supply settings but also by the nominal parameters of the two beams (energy, emittance, etc.). From these follow the calculated values of the orbit and optical functions (so-called "Twiss functions").

Selection

> Most often, this is a part of the machine (known as a **Lattice Module**) for which the optical information is presented (e.g., a long straight section like IR2, or a generic ArcCell). In such cases values are given at the exits of all the machine elements (dipole magnets, quadrupoles, BPMs, drift spaces, ...). However, in some cases (e.g., the Interaction Points module) only a selection of elements is used.

Sequence

> This is either "Beam 1" or "Beam 2" (the MAD sequences for the two rings are called LHCB1 and LHCB2), usually presented side-by-side on a Web page. Although one often speaks loosely of Ring 1 or Ring 2, Beam 1 or Beam 2, etc., it should be remembered that both the beam and the hardware are ingredients

Spreadsheet changes

Further planned improvements

- **SURVEY information**
  - Cleaner implementation with less duplication
  - Downloadable geometric transformations for each insertion, etc.

- **Aperture**
  - Downloadable functions
  - Included in all MAD samples
  - Added to 3D beam envelopes
  - New 2D plots

NAME	s	x_c	p_{xc}	y_c	p_{yc}
IP2	3332.44	0.002	0	0.0015	0.00024
IP2	3332.28	-0.002	0	0.0015	-0.00024

$(7\,\sigma_x, 7\,\sigma_y, 5\,\sigma_t)$ envelope