# FLUKA with Geant4 Geometry

7th FLUKA Course

NEA Paris, Sept.29-Oct.3, 2008

# FLUKA with Geant4 Geometry

FLUGG is an extension of FLUKA that allows to

- Define the geometry, material assignments, magnetic field in the Geant4 format
- *navigate* in the geometry calling the Geant4 geometry classes
- FLUGG is available as a tar file from the FLUKA web page
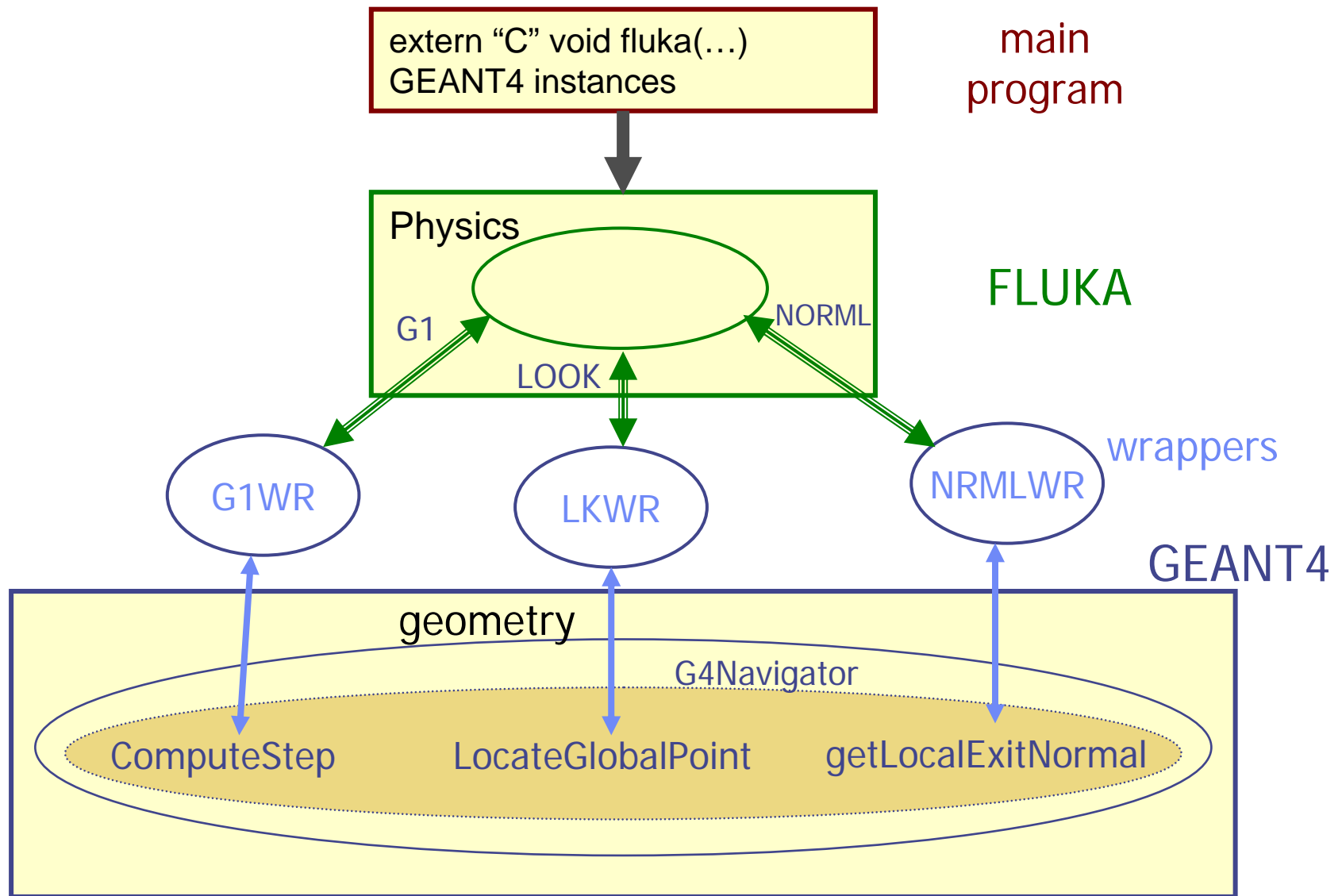- Presently updated to Geant4 version 9

## WARNING:

- No geometry debugger (not possible)

## IMPORTANT NOTE:

- Only the *navigation* is performed by G4, the tracking (multiple scattering, approach to boundaries etc) is performed by FLUKA

# General Structure of FLUGG [1/2]



extern "C" void fluka(…)
GEANT4 instances

main program

Physics

G1

NORML

LOOK

FLUKA

G1WR

LKWR

NRMLWR

wrappers

GEANT4

geometry

G4Navigator

ComputeStep

LocateGlobalPoint

getLocalExitNormal

# General structure of FLUGG [2/2]

- The **Installation** procedure prepares **Libraries** with the G4 geometry classes and the FLUGG "wrappers"

- The **User** prepares the **Detector Construction** and a **C++ main** from template

- The application is built from **Flugg + FLUKA library**

- The **C++ main** calls **Geometry initialization** and **FLUKA "real" main**

- The **FLUKA "real" main** reads datacards and performs a "standard" run:
    - **Calls to Geometry** routines are redirected through FLUGG wrappers to G4 geometry methods
    - **Output** of results is the **standard FLUKA**

# What is needed

FLUKA distribution      http://www.fluka.org

FLUGG tar file      http://www.fluka.org → tools → flugg

CLHEP libraries      http://proj-clhep.web.cern.ch/proj-clhep/

GEANT4 distribution      http://cern.ch/geant4/

WARNING:

- The CLHEP version must be compatible with the G4 version in FLUGG.

- Be careful to compiler "consistency" among libraries.

How to install:

- Step by step instruction can be found in the FLUGG web page, and in the FLUGG talk of Houston-2005 FLUKA course [available on the NEA2008 course website]