

LIGGGHTS – Open Source DEM

3 day short course

Goals of the course is

- a short introduction into C++
- learning the basics of **numerical particle simulations** with the "Discrete Element Method" (**DEM**¹)
- Participants learn to use the Open Source DEM package **LIGGGHTS**, www.liggghts.com.
- Participants learn **apply** this knowledge to specific problems

The range of possible applications of the DEM is broad, and comprises bulk solids handling, process engineering topics, geomechanics and many more.

Schedules

- Two course runs are scheduled for **June 9-11** and **September 22-24**
- The courses will be held in the city of **Linz**, Austria, exact venue tba
- Participants can work on our computers or on their own Laptops²
- The courses can be taken online (via remote access / video-conferencing) as well²
- Course language is English, material is also provided in English

Course Fee³

- PhD student under 35⁴: 390€ (+ 20% Austrian VAT: 468€ total)
- Academical affiliates⁴: 590€ (+ 20% Austrian VAT: 708€ total)
- Other: 690€ (+ 20% Austrian VAT: 828€ total)

Lecturer

The course will be held by Christoph Kloss, researcher at CD Lab for Particulate Flow Modelling and main developer of the LIGGGHTS package.

Contact: christoph.kloss@cfdem.com, www.cfdem.com, +4373224686476

¹ http://en.wikipedia.org/wiki/Discrete_element_method

² Working on your own computer requires prior installation of all required software packages on your computer. The course participant is responsible for preparing this. If you are not yet familiar with LIGGGHTS and / or Linux, we can offer you a remote installation, which is not included in the course fee. The list of required packages will be sent to you as soon as you have registered. If you are interested in receiving remote installation, please request a separate quote for that.

³ **Please pay to: Christoph Kloss, BIC: EASYATW1 IBAN: AT441420020010413746**

The following policy applies: **The course fee has to be paid at least 2 weeks before the start of the course.**

Cancellation policy: If you cancel less than two weeks prior to course start, you have to pay the full fee, but you are eligible to take part in one of the next course runs with a discount of 35%

⁴ Please send confirmation along with registration form

Open Source CFD

2 day short course

Open Source CFD course

You will also have the opportunity of taking a CFD class, where the course runs are scheduled for June 7-8 and September 20-21

Goals of the course is

- introduction to linux and C++ in Open Source CFD
- introduction to Open Source CFD in order to 'get started'
- introduce how to modify Open Source CFD for specific purposes
- introduction to postprocessing CFD results with paraview and octave

Schedules

- Two course runs are scheduled for June 7-8 and September 20-21
- The courses will be held in the city of Linz, Austria, exact venue tba
- Participants can work on our computers or on their own Laptops and USB-drive (see course fee)
- Course language is English, material is also provided in English
- Note that the course is only held if a certain number of participants is reached.

Course Fee⁵

- PhD student under 35 : 260€ (+ 20% Austrian VAT: 312€ total)
- Academic affiliates: 390€ (+ 20% Austrian VAT: 468€ total)
- Other: 460€ (+ 20% Austrian VAT: 552€ total)
- USB disc 95€ (optional)

Note: If the participant wishes to work on a personal Laptop, a USB disc having all necessary software preinstalled is prepared. For the USB disc (320 GB) including the installation 95 € must be charged extra.

Lecturer

The course will be held by Christoph Goniva, researcher at CD Lab for Particulate Flow Modelling.

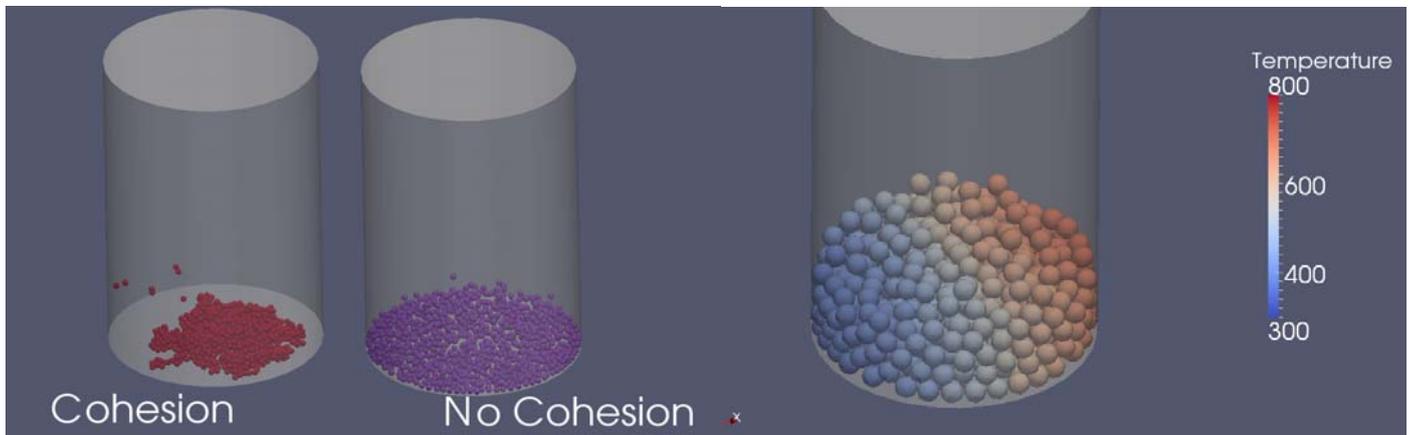
Contact: christoph.goniva@cfdem.com, www.cfdem.com ; +4373224686475

⁵ Please pay to: **Christoph Goniva, BIC: EASYATW1 IBAN: AT321420020010191638**

The following policy applies: **The course fee has to be paid at least 2 weeks before the start of the course.**

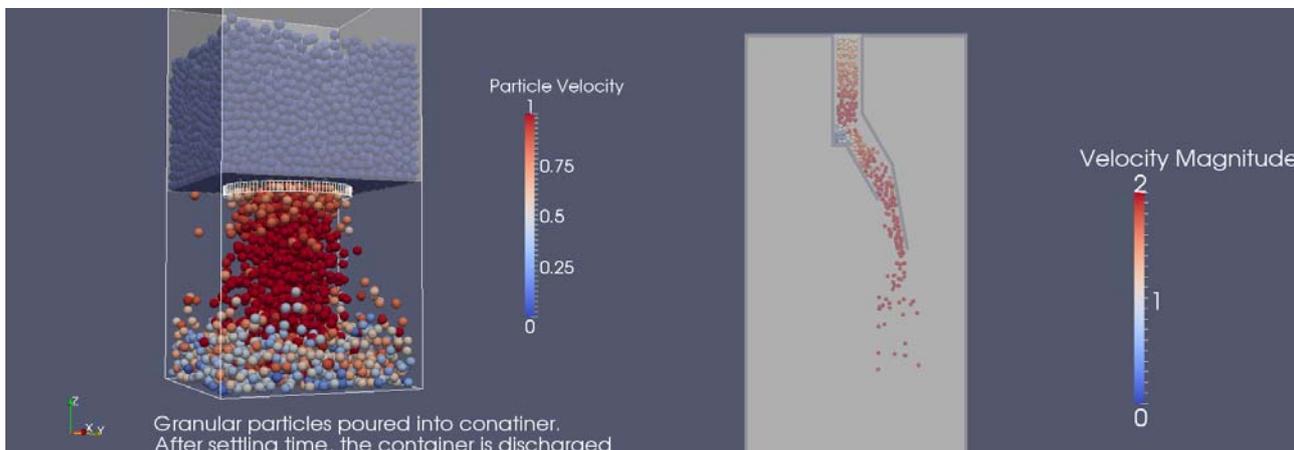
Cancellation policy: If you cancel less than two weeks prior to course start, you have to pay the full fee, but you are eligible to take part in one of the next course runs with a discount of 35%

Some LIGGGHTS application examples:



Left: Influence of cohesion on particle behaviour

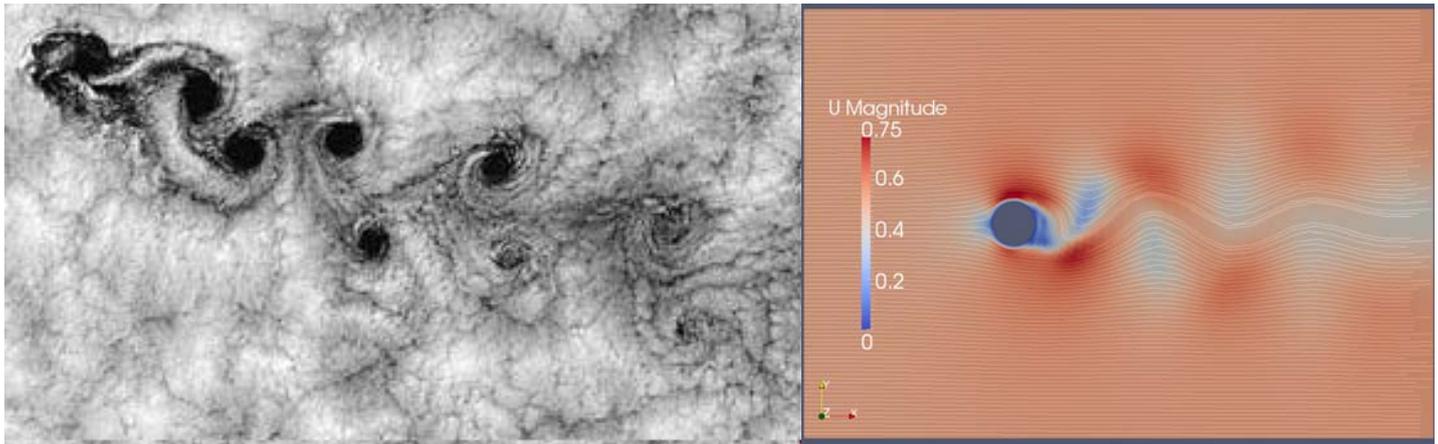
Right: Heat transfer in a particle bed



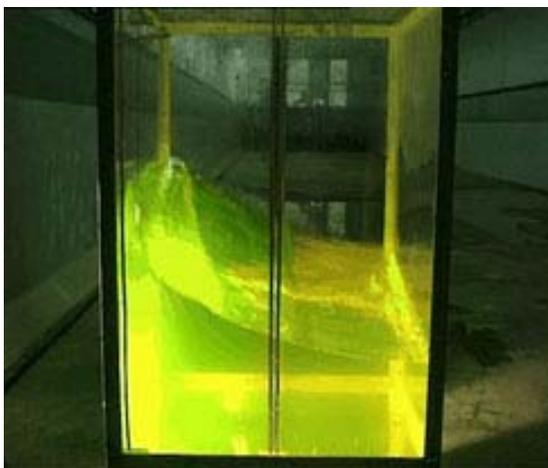
Left: Hopper flow; Right: Particle charging, geometry imported from CAD

For more example, visit our website at www.liggghts.com | www.cfdem.com

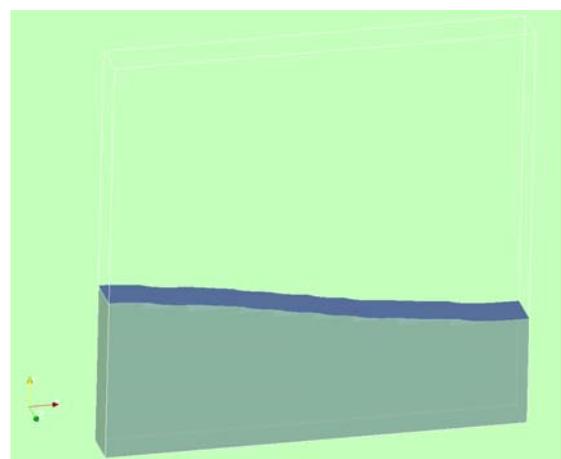
Some CFD course examples:



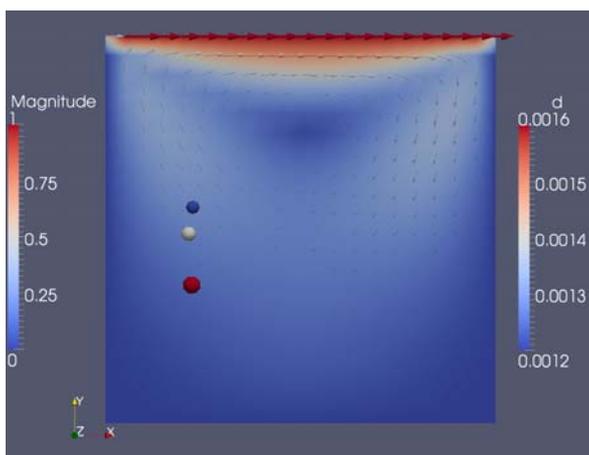
Von Kármán vortex street off the Chilean coast near the [Juan Fernandez Islands](#). (Wikipedia)



Sloshing tank experiment.
<http://www.sintef.no>



Sloshing tank



passive Lagrangian particle simulation

For more example, visit our website at www.cfdem.com

LIGGGHTS – Open Source DEM (3 day course)

REGISTRATION FORM

Registrations should be sent at least 3 weeks before the course starts and payment should be sent at least 2 weeks before the course starts.

Which course will you attend?

June 9-11 _____

September 22-24 _____

How will you attend?

Online, on my own computer _____

On-site (Linz), on my own computer _____

On-site (Linz), on a provided computer _____

Title _____ Surname _____ First name _____

Organisation _____

Address _____

_____ Postcode _____

Tel. _____ Fax. _____

Email: _____

COURSE FEES including refreshments and lunches

COURSE DINNER

I would like to attend the Course Dinner on June 9th / Sept. 23rd

(additional cost: 50€ inclusive. VAT) YES / NO

VENUE The course is held in the city of Linz, exact venue tba.

ACCOMMODATION – The participants are responsible for booking own accommodation. The following hotels are proposed :

- Park Inn Linz (****), <http://www.linz.parkinn.at/>
- Austria Trend Hotel Schillerpark (****), <http://www.austria-trend.at/Hotel-Schillerpark/en/>
- Dom Hotel Linz (****), <http://www.domhotel.at/>
- Austria Classic Hotel Wolfinger (***) <http://www.hotelwolfinger.at/>
- Hotel Ibis Linz (**), <http://www.accorhotels.com/gb/hotel-1722-ibis-linz/index.shtml>

I confirm that I comply with the registration / cancellation policy

I understand that if I work on my own computer, the software needed must be installed before starting the course (a list will be provided upon registration). Installation help is provided at www.liggghts.com. If you need assistance with the installation, please contact us separately on that issue.

Date and signature:

Please send completed form to:

- by e-mail (preferred) to training@ligggghts.com
- by fax to ++43-(0)732-2468-6462

Open Source CFD (2 day course)

REGISTRATION FORM

Registrations should be sent at least 3 weeks before the course starts and payment should be sent at least 2 weeks before the course starts.

Which course will you attend?

June 7-8 _____
September 20-21 _____

How will you attend?

On-site (Linz), on my own computer _____
On-site (Linz), on a provided computer _____

Title _____ Surname _____ First name _____

Organisation _____

Address _____

_____ Postcode _____

Tel. _____ Fax. _____

Email: _____

COURSE FEES including refreshments, lunches.

VENUE The course is held in the city of Linz, exact venue tba.

ACCOMMODATION - The participants are responsible for booking own accommodation. The following hotels are proposed :

- Park Inn Linz (****), <http://www.linz.parkinn.at/>
- Austria Trend Hotel Schillerpark (****), <http://www.austria-trend.at/Hotel-Schillerpark/en/>
- Dom Hotel Linz (****), <http://www.domhotel.at/>
- Austria Classic Hotel Wolfinger (***), <http://www.hotelwolfinger.at/>
- Hotel Ibis Linz (***), <http://www.accorhotels.com/gb/hotel-1722-ibis-linz/index.shtml>

I confirm that I comply with the registration / cancellation policy

Date and signature:

Please send completed form to:

- by e-mail (preferred) to christoph.goniva@cfdem.com
- by fax to ++43-(0)732-2468-6462