

Minutes EU-EID EAGRE Meeting 26th April 2022 at MARIN/online

Meeting: Tuesday 26-04-2022 at 12-15 Dutch time, 11-14 BMT.

Where: at MARIN and online (Teams set by MARIN).

Minutes (in italics under each agenda item): by Onno (circa 30-04-2022).

Attendance:

- Yang Lu and Wajiha Rehman (online);
- Tim Bunnik, Sander Boonstra and Onno Bokhove (at MARIN).

Agenda

1. Approval agenda

- *Approved.*

2. Short introduction of people [Wajiha, Yang, Tim, Sander, Onno]

- *Performed.*

3. Status update project management:

- a) arrival of ESRs at MARIN (online & in person; subject to visa approval):

- Late May/Early June; arrival dates to be communicated to MARIN/UoL; accommodation arranged in Wageningen as of June 1st. Travel to be arranged and communicated to MARIN/UoL; visas to Netherlands valid for next three months starting from 20-04-2022.

- b) protocol at MARIN (Tim & Sander):

- Dr Tim Bunnik had a welcome online meeting with Wajiha Rehman on 20-04-2022, per EU's request; completed. Wajiha will be travelling to Pakistan and then back to Leeds from 27-04-2022 to 07-05-2022.

- Info by Tim: ESRs will be located in zone-1 at MARIN and access to zone-2 is only possible when accompanied by Dr Tim Bunnik and when access is allowed; between 50%-100% work attendance at MARIN premises required. So maximally working 50% from home. There will be access to some MARIN drives and the linux cluster; to-be-determined whether and how Firedrake can be installed on MARIN's cluster.

4. Presentation Yang and Wajiha on research completed and undertaken. ~15-90min.

Discussion.

- *Nice comprehensive presentations by Yang and Wajiha.*

- *Discussions/Questions, summary discussion Yang's talk:*

** TC1: confusing labels $4*(dt/2)$ for SV and $2*(dt/2)$ for SE; please fix.*

** 2nd order in space and time; clearly denote.*

** TC3: there is no strict energy conservation (so do not say that) but boundedness of oscillations of energy, oscillations going to zero when dt goes to 0.*

** Agreement for TC4 reasonably well. Tim: what is the cause of deficiencies with data? Discussion on wave maker specification, etc.*

** Tim: what is new relative to Floriane Gidel's findings? Reply: mild-slope restrictions removed, reproducibility tested and extended, transfer of code documented, code and mathematical formulation improved and made more concise possibly leading to faster*

code as well; version control.

* Sander: how many polynomials are used in the vertical? 9? Discussion on improving the polynomial order and/or type.

* Sander: what about version control? Reply: in progress in collaboration with the Firedrake team; has our attention.

Summary discussion Wajiha's talk:

* \dot{R} not partial R (since no y dependence).

* Single point error comparison for 3D beam; what about error in 3D space?

* NLSWE: use η and ϕ instead of h ?

* NLSWE with wave maker: compare/run at higher amplitude, also compare with Yang's code in 2D mode/symmetric in y , and for long-wave shallow-water set-up (i.e. for long waves with little vertical z -structure).

* it's -> its.

5. Formal deliverables completed (reproducible test cases TC1-TC4, waveflap wavemaker formulation/VP strategy). Discussion.

- Presentation by Onno.

6. Pending deliverables, e.g.:

- ESR1 delivery of package & Firedrake TC1-TC6,
- ESR1 short-crested waves TC5-TC6 & collaboration with Dr Junho Choi,
- ESR1/ESR2 wave breaking,
- ESR1 potential-flow-beach coupling (one or two pending papers);
- ESR2 waveflap implementation,
- ESR2 wave-beam interactions & WP2.7 alternatives,
- theory wave-beam interactions (M&O, ESR2);
- theory wave-current interactions; and,
- discussion (throughout).
- Presentation by Onno.

7. Conferences [Poland, EGU], courses (two at MARIN, Burgers'), TBD (OMAE, ICCE).

- Overview give; abstract Poland just accepted (Yang). EGU was already accepted (Onno).

8. Papers (WW, JCP, ...).

- Paper for Water Waves now accepted and in press; completion paper for JCP with Yang imminent. Test cases TC1-TC4 and TC2b completed; one more extension pending (wave packet travelling over topography with comparison to asymptotic results —shallow wave structure).

9. Experimental data and experiments, e.g. use Delft experiment ones.

- Added discussion on MARIN data from few years back for breaking waves.

- **Action-pending:** Tim and Sander will look for data; to-be-discussed with ESRs after their arrival at MARIN.

10. Further discussion. What else?

- *Nothing to discuss by most.*
- *Yang: can e get a home screen? Reply: no, at your own cost but one can work 100% of the time at the MARIN premises.*
- *Wajiha: can we discuss floating solar panel structures? Reply: to be discussed and continued. **Action-pending.***

11. Closing.

- *Closing by Onno [chair] at circa 15:00 Dutch time.*

--Onno Bokhove, o.bokhove@leeds.ac.uk