Agenda for OSIRIS Users and Developers Workshop

Monday, September 18

8:30-9:00	**Breakfast**
9:00-9:10	**Welcome by Warren Mori**
	Introduction to OSIRIS 4.0
9:10-10:00	Object-Oriented Structure and How To Be A Developer *Ricardo Fonseca and Adam Tableman*
10:00-10:10	Break
10:10-11:00	Case Study – Implementing the PGC *Ricardo Fonseca and Anton Helm*
11:00-11:10	Break
11:10-12:00	New Hardware Support: AVX2, AVX-512 (KNL), and GPU *Ricardo Fonseca and Adam Tableman*
12:00-12:15	Collisions *Joshua May*
12:15-1:30 12:45-1:15	**Lunch &** **Lunchtime tutorial on Accessing OSIRIS and using OSIRIS through GitHub** (*led by Anton Helm*)
	New features in OSIRIS 4.0
1:30-1:50	Ponderomotive Guiding Center: PGC *Anton Helm*
1:50-2:10	Quasi 3D including field ionization *Asher Davidson and Thamine Dalichaouch*
2:10-2:40	QED *Thomas Grismayer*
2:40-3:00	Break & Poster Viewing
3:00-3:30	Customized FD and Hybrid FFT/FD Algorithms for eliminating the NCI *Xinlu Xu*
3:30-4:00	New Antennas for modeling the nonlinear optics of plasmas & Non-uniform particle weighting *Han Wen*

4:00-4:10	Break & Poster Viewing
4:10-4:20	Diagnostic for azimuthal harmonic expansion *Thamine Dalichaouch*
4:20-4:30	Beam field initialization *Ricardo Fonseca*
4:30-5:00	Open discussion on how to become a developer of OSIRIS *Led by Ricardo Fonseca*

Tuesday, September 19

8:30-9:00	**Breakfast**
	Short talks on usage of OSIRIS 3.0 or 4.0, with audience feedback & discussion
9:00-9:15	Modeling LWFA: Downramp injection *Xinlu Xu*
9:15-9:30	Modeling LWFA with the quasi-3D version *Asher Davidson*
9:30-9:45	Modeling PWFA *Weiming An*
9:45-10:00	OSIRIS usage at DESY: full start-to-end PWFA simulations for FLASHForward *Jens Osterhoff*
10:00-10:15	Break
10:15-10:30	Particle In Cell Compton Scattering *Fabrízio Del Gaudio*
10:30-10:45	Coupling of Numerical PIC and Monte Carlo *Paulo Alves*
10:45-11:00	Numerical challenges in efficient modeling of colliding flows *Scott Feister*
11:00-11:15	Modeling Nonlinear Optics of Plasmas (ICF related laser-plasma interactions) *Frank Tsung*
11:15-11:30	Break
11:30-11:45	Modeling collisionless shocks and overdense laser-plasma interactions *Frederico Fiuza*

11:45-12:00 Modeling ionization injection
Xinlu Xu

12:00-1:30 **Lunch &**
12:45-1:15 **Lunchtime status report on Documentation and the Wiki Page** (*led by Anton Helm*)

Current development and discussion of ideas for future plans

1:30-1:45 Dynamic Load Balancing
Ricardo Fonseca

1:45-2:15 Overview of PICKSC Science Gateway
Qiyang Hu and Frank Tsung

2:15-2:30 Break

2:30-2:45 Integrating UPIC Algorithms into OSIRIS
Michael Touati

2:45-3:00 Boris correction: Exact and approximate
Kyle Miller

3:00-3:15 Research at FEMTO-ST Institute
Francois Courvoisier

3:15-3:30 Break

3:30-3:45 Modified spherical coordinates system for PIC simulations of pulsar magnetospheres
Fábio Cruz

3:45-4:00 Multi-dimensional shearing modules in OSIRIS 4.0
Giannandrea Inchingolo

4:00-4:15 QED energy and relativistic temperature diagnostics
Kevin Schoeffler

4:15-5:00 Discussion on Directions for Future Development: Wish List

Wednesday, September 20

8:30-9:00 **Breakfast**

Discussions on Best Practices, Test Problems, Example Problems, and Gateway Usage

9:00-9:30 Discussion on Simulating High-Energy Density Physics
Moderated by Frank Tsung and Han Wen

9:30-10:00 Discussion on Simulating Plasma-Based Accelerators
Moderated by Warren Mori and Xinlu Xu

10:00-10:15 Break

10:15-11:00 Discussion on Simulating Collisional Processes
Moderated by Frederico Fiuza and Archis Joglekar

11:00-11:30 Discussion on Simulating Ultra High Intensity Lasers
Moderated by Thomas Grismayer and Michael Touati

11:30-12:00 Discussion on the Science Gateway and Educational Software
Moderated by Frank Tsung, Warren Mori, and Ricardo Fonseca

Preview of Educational Test Problems
Kyle Miller and Lance Hildebrand

12:00-1:30 **Lunch &**
Lunchtime Feedback on Needs and Outcomes *(moderated by Warren Mori and Ricardo Fonseca)*

2:00-5:00 **Informal working discussions**

Thursday, September 21

9:00-12:00 **More informal working discussions if there is interest**