

Agenda for TTT-RCA CFD Prediction Error Assessment Workshop, March 20-22, 2018

Lockheed-Martin Center for Innovation

8000 Harbour Boulevard, Suffolk, VA 23435

TC Statement: Identify and downselect critical turbulence, transition, and numerical method technologies for 40% reduction in predictive error against standard test cases for turbulent separated flows, evolution of free shear flows, and shock-boundary layer interactions on state-of-the-art high performance computing hardware.

Date	Time	Item	Presenter/Org	Time
20-Mar	7.15am	Registration		
	8.00am	Overview of RCA research portfolio and Technical Challenge	Mujeeb Malik/LaRC	40
		RANS Modeling		
	8.40am	Reynolds stress modeling (RSM)	Chris Rumsey/LaRC	25
	9.05am	RSM at DLR	Bernhard Eisfeld/DLR	15
	9.20am	Two equation k-kl Modeling	K. Abdol-Hamid/LaRC	25
	9.45am	Assessment of the triple-product and advanced Reynolds-stress Lag turbulence models	Mike Olsen/ARC	25
	10.10am	RANS at ANSYS ?	Zore ?/ANSYS	15
	10.25am	Break		20
		Scale Resolving Simulations		
	10.45am	Wall-modelled LES	Parviz Moin/Stanford	25
	11.10am	Wall-resolved LES of RCA test case 1-2	Ali Uzun/NIA	25
	11.35am	Wall-modelled LES of RCA test case 1-2 and 5	Prahladh Iyer/NIA	25
	12.00pm	Lunch		60
	1.00pm	LBM/hybrid methods for RCA test cases	Cetin Kiris/NASA ARC	25
	1.25pm	Model-invariant hybrid LES-RANS Computations: Wall-modelled and embedded-LES	Steve Woodruff/LaRC	25
	1.50pm	Hybrid RANS/LES for test case 1 and 2	Robert Moser/UT_Austin	25
	2.15pm	Partially averaged Navier-Stokes	Sharath Girimaji/Texas A&M	25
	2.40pm	Break		20
	3.00pm	LES of Shock Wave Boundary Layer Interaction	Manan Vyas/GRC	25
	3.25pm	LES of Turbulent Hot Jets and Prediction of Turbulent Heat Flux	Jim Debonis/GRC	25
	3.50pm	LES of Compressible Shear Layers and Examination of Turbulent Inflow Methods	Mina Mankbadi/GRC	25
	4.15pm	POWERFLOW LBM	Benjamin Duda/EXA	15
	4.30pm	TBD	Hirsch?/Numeca	15
	4.45pm	End of Day 1		
	6.30 PM	Group Dinner		
21-Mar				
	7.30am	Start of Day 2		
		Scale Resolving Simulations - continued		
	8.00am	DNS/LES of Separated Flows	P. Balakumar/LaRC	25
	8.25am	DNS of separation bubble	G. Coleman/LaRC	25
		Numerical Methods		
	8.50am	Combined Uncertainty and Error Bound Estimates for CFD Problems	Tim Barth/ARC	35
	9.25am	FUN3D and unstructured-grid CFD algorithms on many-core HPC systems	Eric Nielsen/LaRC	25
	9.50am	The T-infinity Framework	Matthew O'Connell/LaRC	25
	10.15am	Break		20
	10.35am	Development of the eddy framework for scale-resolving simulations	Scott Murman/ARC	25
	11.00am	The quest and achievement of CFD's holy grail: nonlinear stability	Mark Carpenter/LaRC	25
	11.25am	GFR – Glenn flux reconstruction code	Seth Spiegel/GRC	25

11.50am	Lunch		60
12.50pm	Stabilized finite-element in FUN3D	Kyle Anderson/LaRC	25
1.15pm	Advanced time stepping methods	HT Huynh/GRC	25
1.40pm	3rd-order accurate hyperbolic NS schemes	Nishikawa/NIA	25
2.05pm	Tetrahedral-mesh DNS/LES of shock and turbulent-flow interactions using the space-time CESE method	Chau Chang/LaRC	25
2.30pm	Break		20
2.50pm	Construction of numerical tools to improve predictability & reliability of compressible turbulence simulations	Helen Yee/ARC	25
3.15pm	Status of Advanced Numerical Solution Techniques for Unstructured Finite Volume CFD Solvers	Mohagna Pandya/LaRC	25
	CFD Validation Experiments		
3.40pm	Juncture flow experiment	Chris Rumsey/??/LaRC	25
4.10pm	THX experiment and analysis	Nick Georgiadis/GRC	25
4.40pm	End of Day 2		

22-Mar	7.30am	Start of Day 3		
	8.00am	Axisymmetric SWBLI validation experiment	Dave Davis/GRC	25
	8.25am	"2-D" flow separation experiment	Flint Thomas/Notre-Dame	25
	8.50am	Mixing-layer experiment	Craig Dutton/U Illinois-UC	25
		Transition		
	9.20am	Measurements and computations of transition induced by roughness elements	Amanda Chou/LaRC	25
	9.50am	Break		20
	10.10am	Effects of 2D surface excrescences on swept-wing boundary-layer transition	Jenna Eppink/LaRC	25
	10.35am	Transition prediction tools development	Meelan Choudhari/LaRC	25
	11.00am	Presentations wrapup/Q&A	TBD	50
	11.50pm	Lunch		60
	12.50pm	Group Discussion: Future Directions/Whither Turbulence Prediction?	Rumsey, Duraisamy, Spalart, Larsson	240
	12.50pm	Group: Roadmap for RANS model development		45
	1.35pm	Group: Roadmap for hybrid RANS/LES and WMLES model development		45
	2.20pm	Break		25
	2.45pm	Group: Experiment cataloging, DNS and LES repository		45
	3.30pm	Group: Numerical methods for turbulence simulations		35
	4.05pm	Group: Future and integration		45
	4.50pm	End of Workshop		