



Ansys Fluent Simulation Report

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System Information

Application	Fluent
Settings	2d, double precision, pressure-based, laminar, transient
Version	21.2.0-10201
Source Revision	fc749f05e
Build Time	May 28 2021 13:54:44 EDT
CPU	AMD Ryzen 5 5500U with Radeon Graphics
OS	Windows

Geometry and Mesh

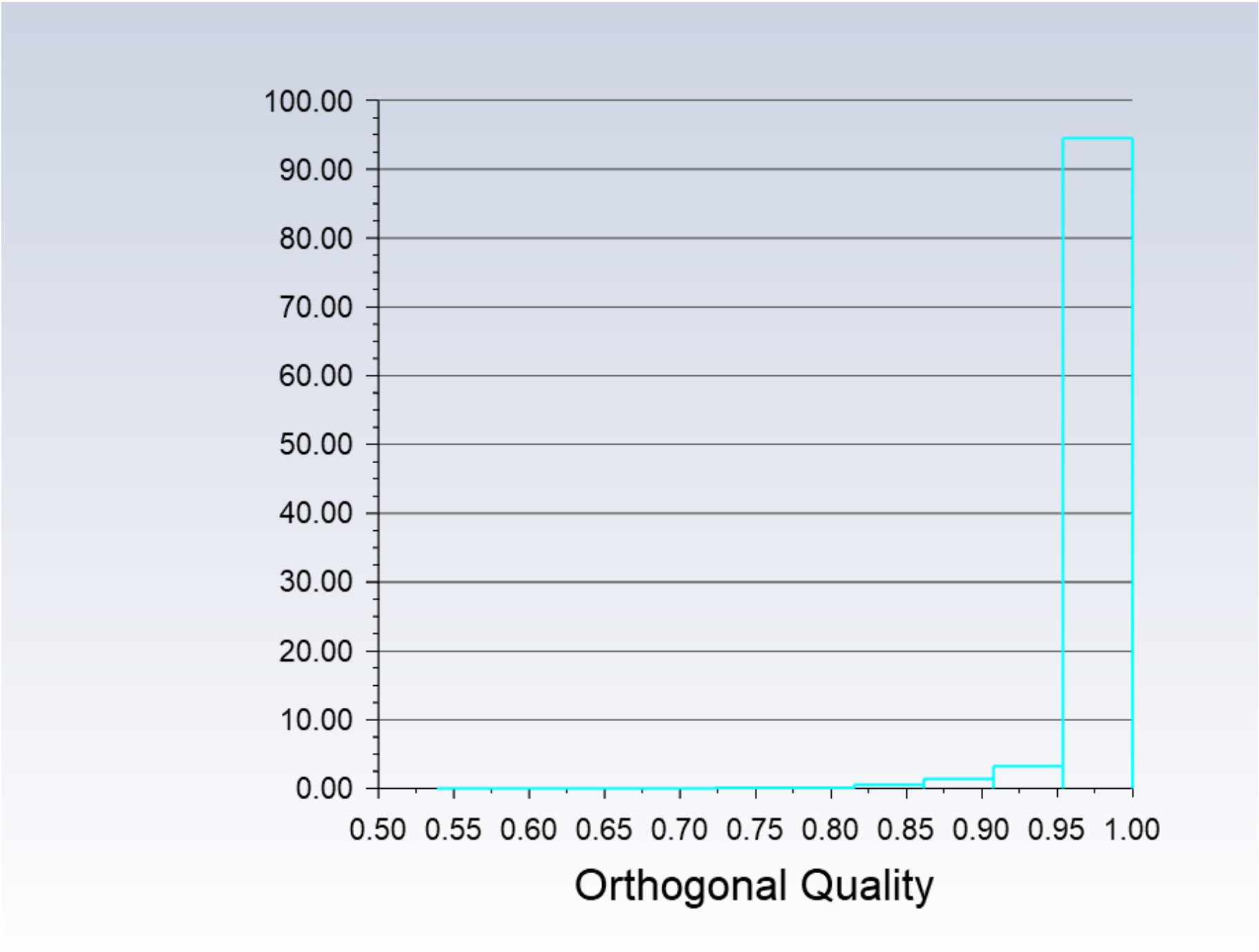
Mesh Size

Cells	Faces	Nodes
12112	24495	12383

Mesh Quality

Name	Type	Min Orthogonal Quality	Max Aspect Ratio
surface_body	Mixed Cell	0.53875963	4.7008717

Orthogonal Quality



Simulation Setup

Physics

Models

Model	Settings
Space	2D
Time	Unsteady, Bounded 2nd-Order Implicit
Viscous	Laminar

Material Properties

— Fluid	
— air	
Density	1.225 kg/m^3
Cp (Specific Heat)	1006.43 J/(kg K)
Thermal Conductivity	0.0242 W/(m K)
Viscosity	1.7894e-05 kg/(m s)
Molecular Weight	28.966 kg/kmol
Thermal Expansion Coefficient	0
Speed of Sound	none
— Solid	
— aluminum	
Density	2719 kg/m^3
Cp (Specific Heat)	871 J/(kg K)
Thermal Conductivity	202.4 W/(m K)

Cell Zone Conditions

— Fluid	
— surface_body	
Material Name	air
Specify source terms?	no
Specify fixed values?	no
Frame Motion?	no
Mesh Motion?	no
Porous zone?	no

Boundary Conditions

— Inlet	
— inlet	
Velocity Specification Method	Magnitude, Normal to Boundary
Reference Frame	Absolute
Velocity Magnitude [m/s]	0.03
Supersonic/Initial Gauge Pressure [Pa]	0
— Outlet	
— outlet	
Backflow Reference Frame	Absolute
Gauge Pressure [Pa]	0

Pressure Profile Multiplier	1
Backflow Direction Specification Method	Normal to Boundary
Backflow Pressure Specification	Total Pressure
Build artificial walls to prevent reverse flow?	no
Average Pressure Specification?	no
Specify targeted mass flow rate	no
— Wall	
— wall_side	
Wall Motion	Stationary Wall
Shear Boundary Condition	No Slip
— wall_object	
Wall Motion	Stationary Wall
Shear Boundary Condition	No Slip

Reference Values

Area	1 m^2
Density	1.225 kg/m^3
Depth	1 m
Enthalpy	0 J/kg
Length	1 m
Pressure	0 Pa
Temperature	288.16 K
Velocity	1 m/s
Viscosity	1.7894e-05 kg/(m s)
Ratio of Specific Heats	1.4
Yplus for Heat Tran. Coef.	300
Reference Zone	surface_body

Solver Settings

— Equations	
Flow	True
— Numerics	
Absolute Velocity Formulation	True
— Unsteady Calculation Parameters	
Number of Time Steps	250
Time Step Size [s]	1
Max Iterations/Time Step	20
— Under-Relaxation Factors	
Pressure	0.8
Density	1
Body Forces	1
Momentum	0.8
— Pressure-Velocity Coupling	

	Type	PISO
	Skewness-Neighbour Coupling	True
	Skewness Correction	1
	Neighbour Correction	1
	— Discretization Scheme	
	Pressure	Second Order
	Momentum	Second Order Upwind
	— Solution Limits	
	Minimum Absolute Pressure [Pa]	1
	Maximum Absolute Pressure [Pa]	5e+10
	Minimum Temperature [K]	1
	Maximum Temperature [K]	5000

Run Information

Number of Machines	1
Number of Cores	4
Case Read	4.824 seconds
Iteration	55.396 seconds
AMG	21.607 seconds
Virtual Current Memory	0.425957 GB
Virtual Peak Memory	0.480011 GB
Memory Per M Cell	23.7893

Solution Status

Flow Time: 275
Time Step: 275

	Value	Absolute Criteria	Convergence Status
continuity	0.0009049302	0.001	Converged
x-velocity	9.048229e-06	0.001	Converged
y-velocity	8.405686e-06	0.001	Converged

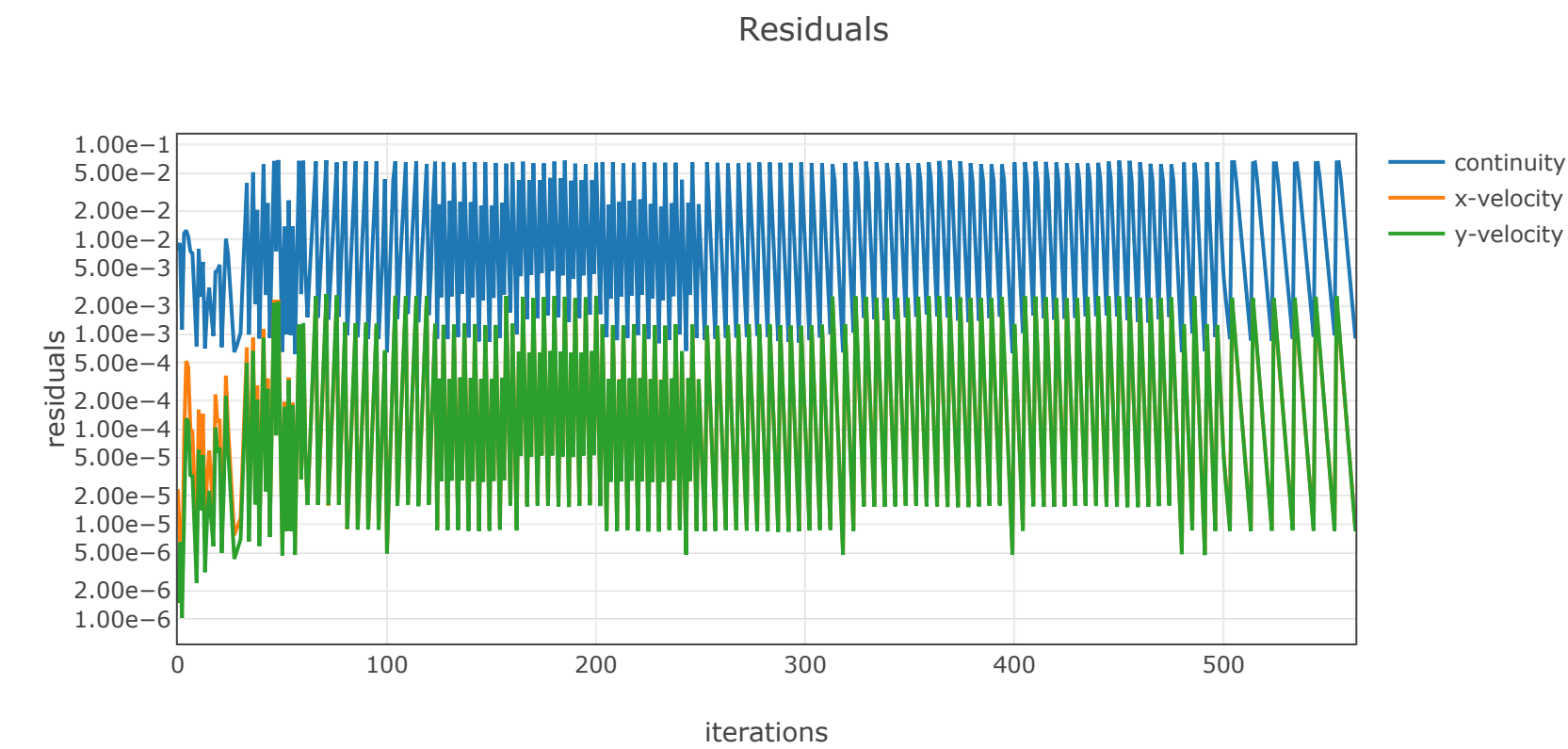
Report Definitions

report-vertex-vel	0.004550377 m/s
report-lift	-2.474188e-05 N

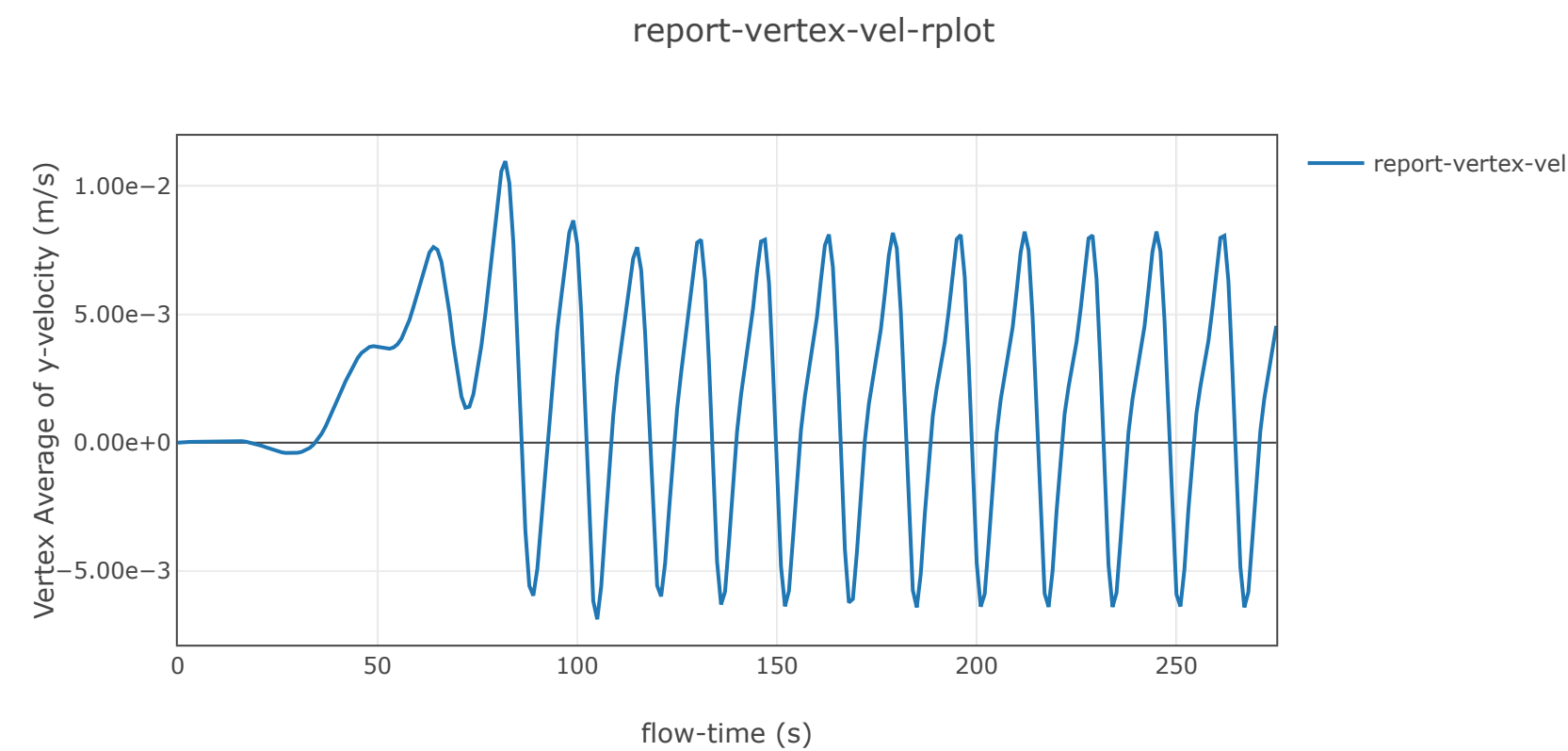
delta-time	1 s
iters-per-timestep	10
flow-time	275 s

Plots

Residuals

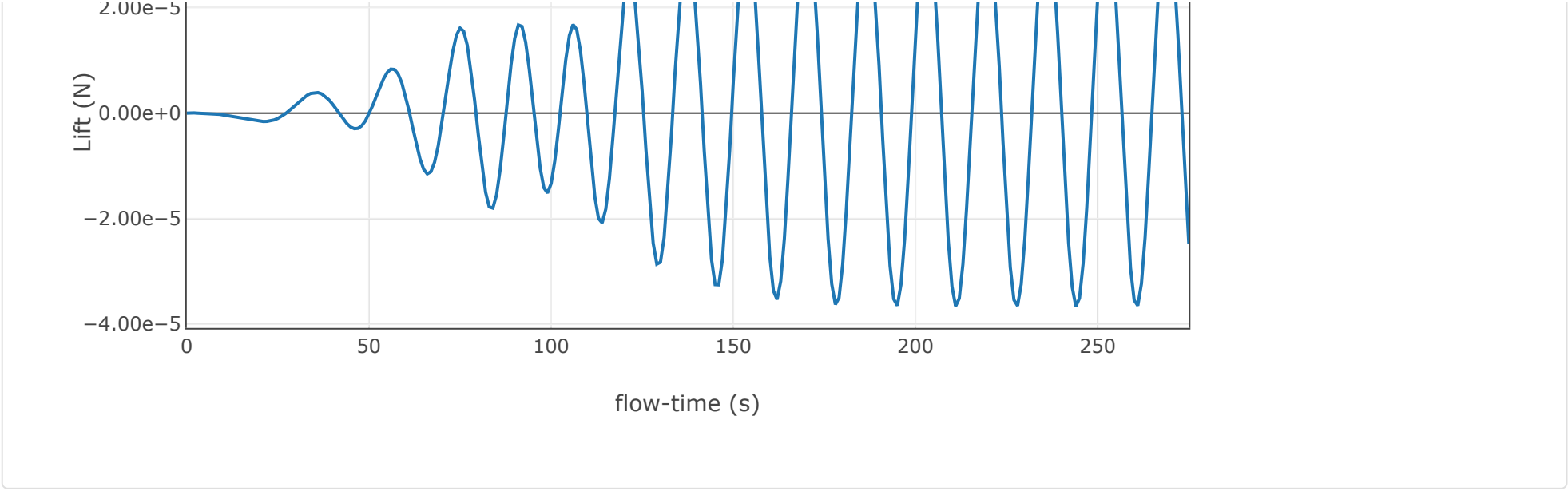


report-vertex-vel-rplot



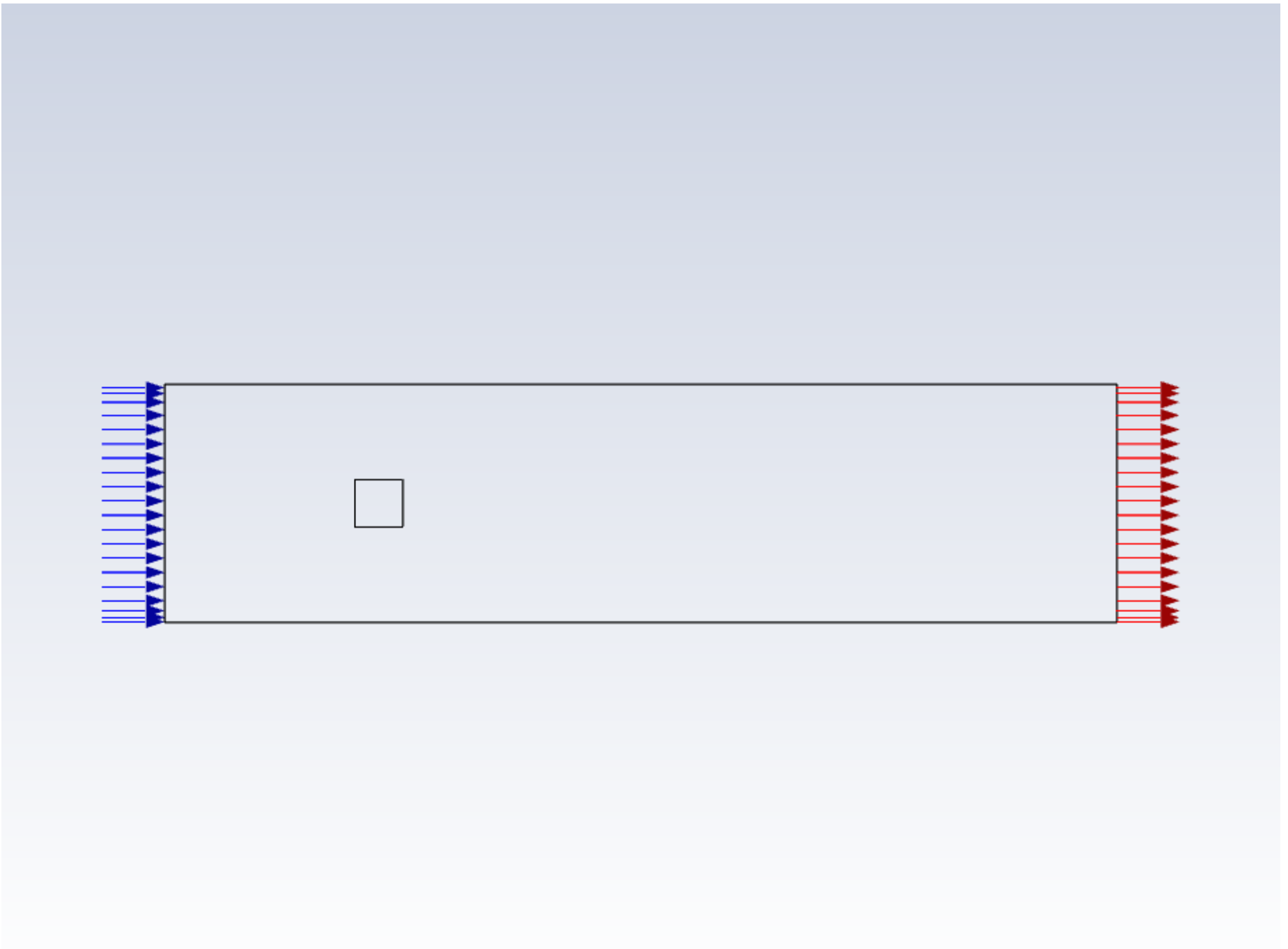
report-lift-rplot





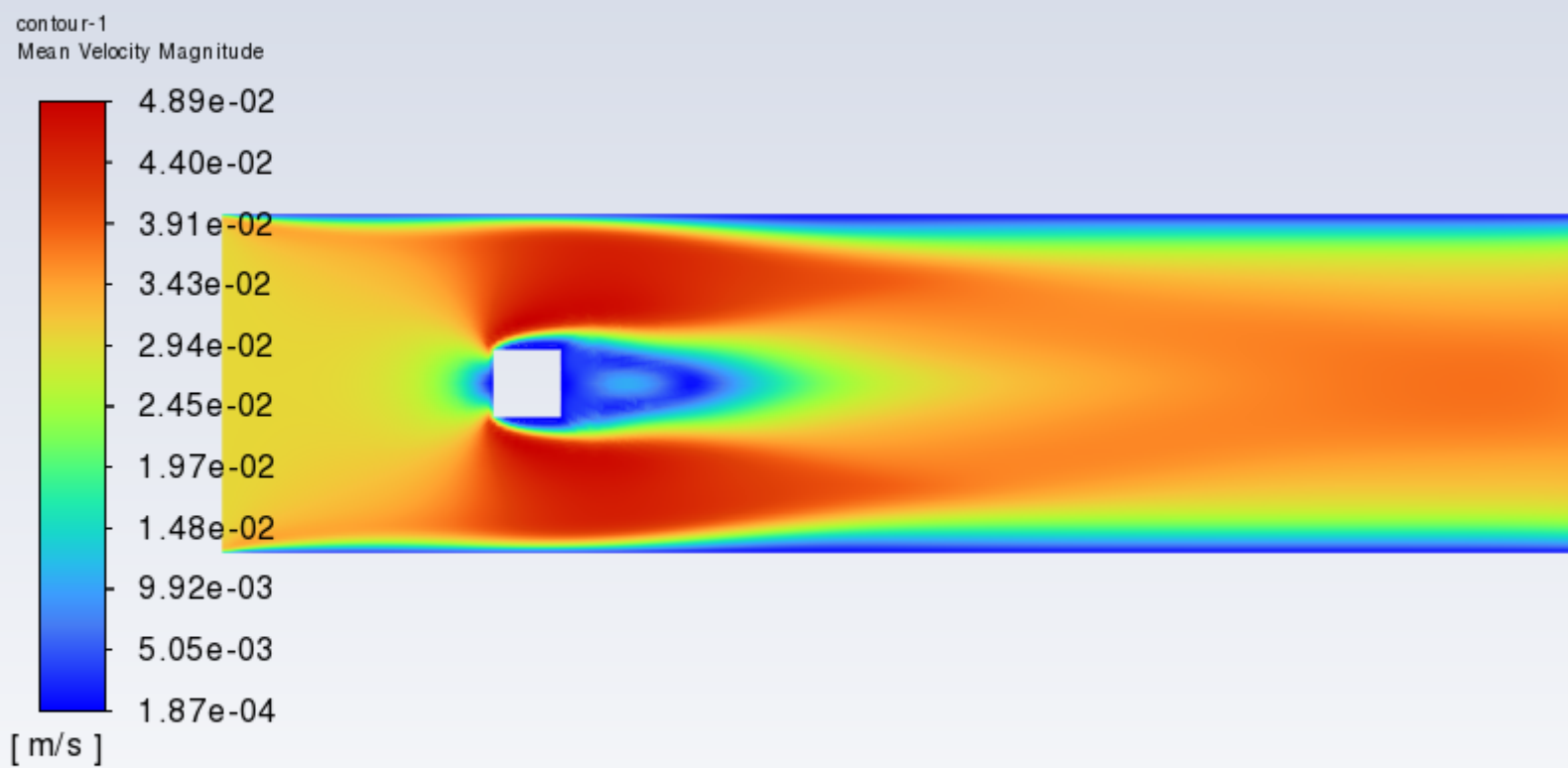
Mesh

mesh-1



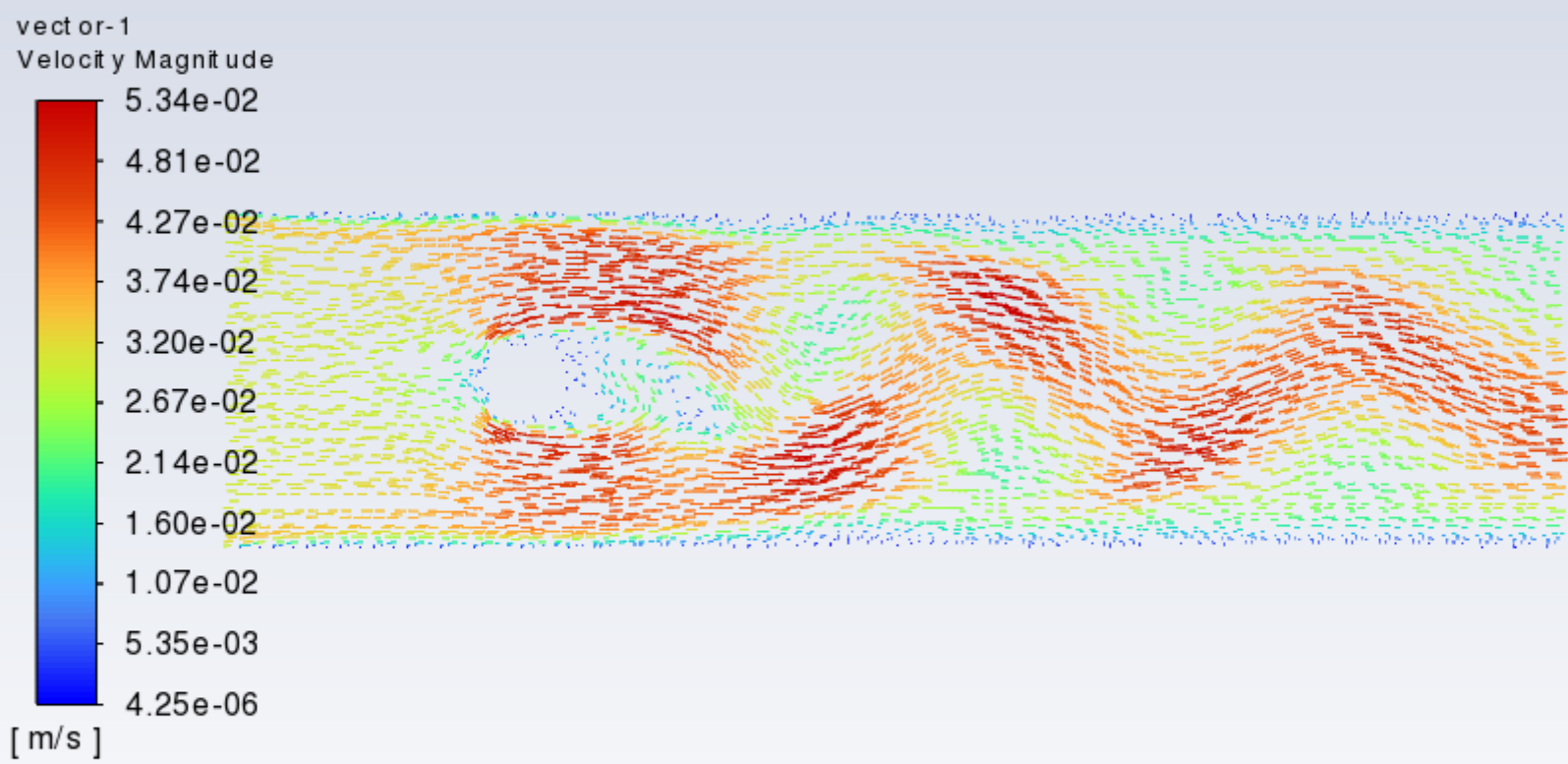
Contours

contour-1



Vectors

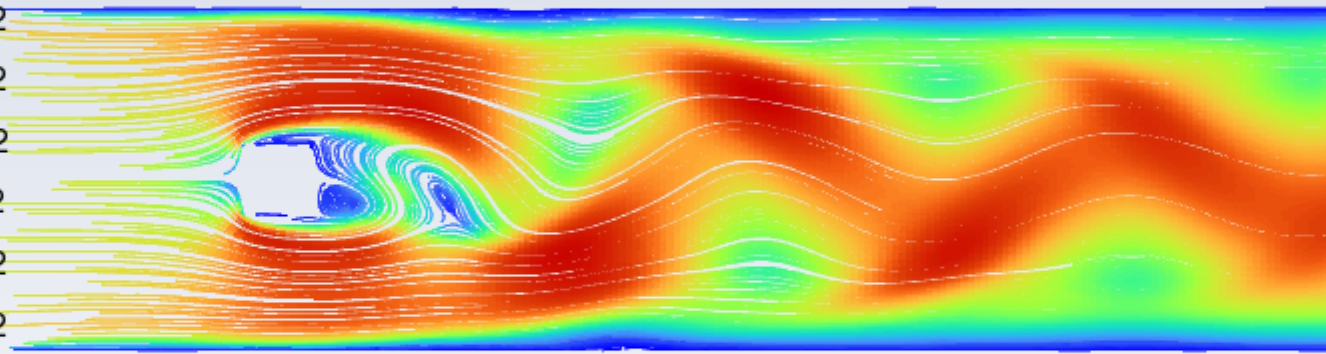
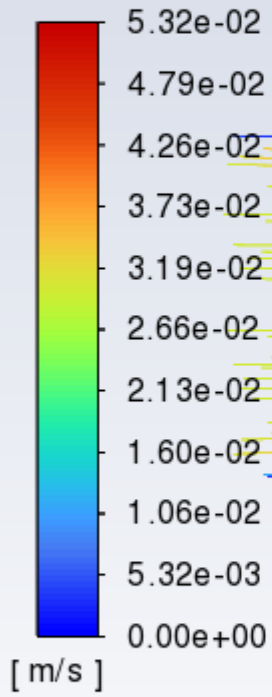
vector-1



Pathlines

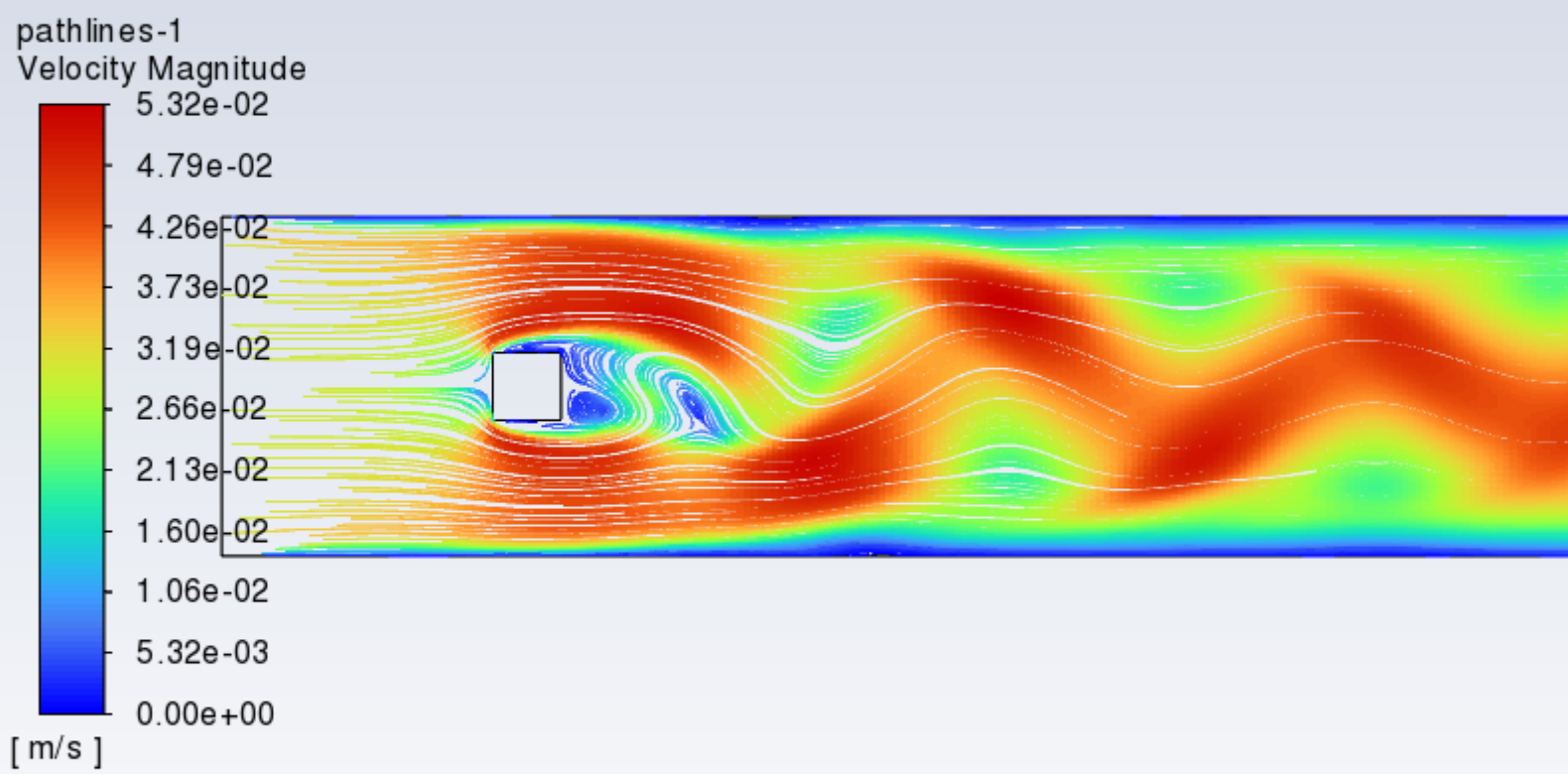
pathlines-1

pathlines-1
Velocity Magnitude

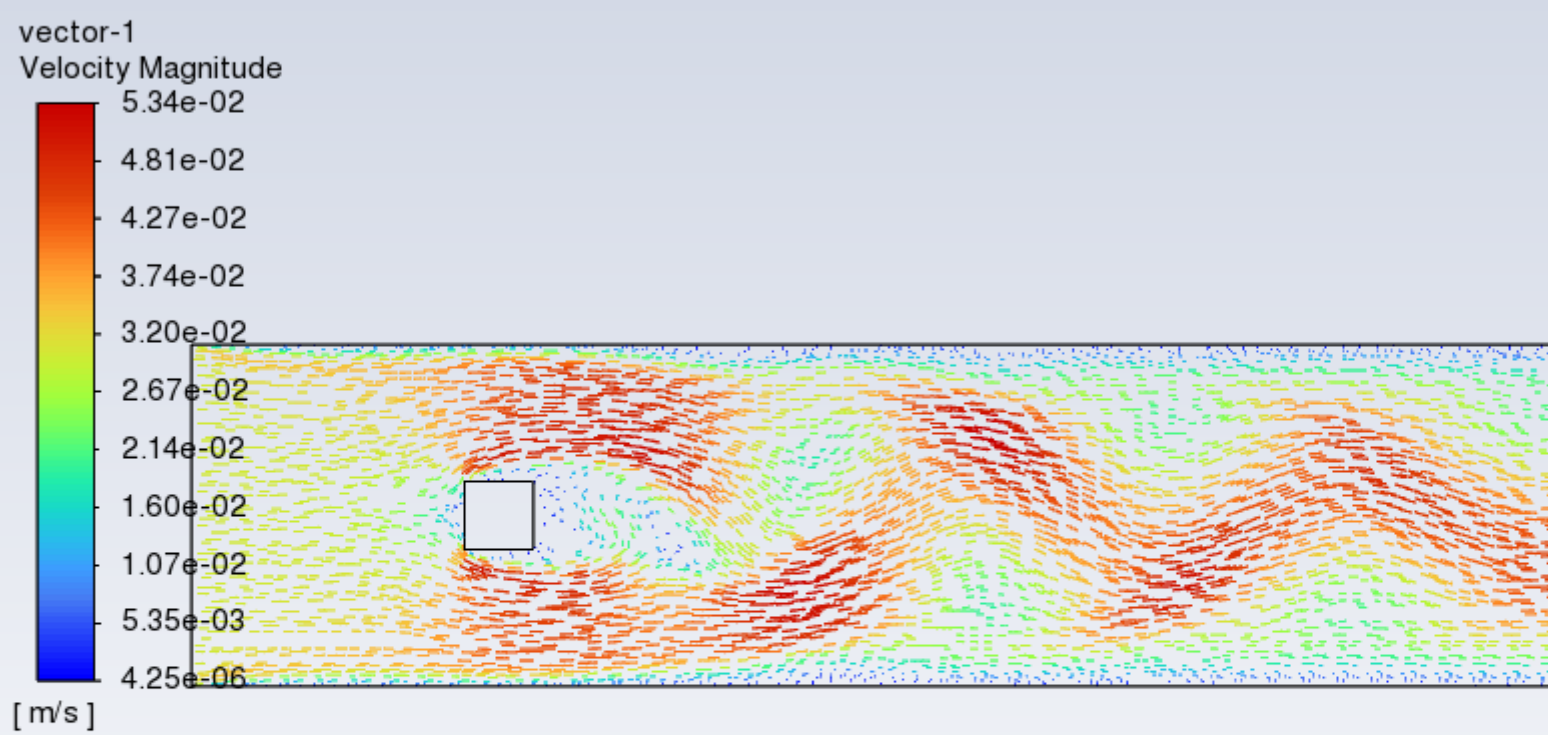


Scenes

scene-2



scene-1



Animations

animation-1

