

GPU-Based Cell Projection for Interactive Volume Rendering



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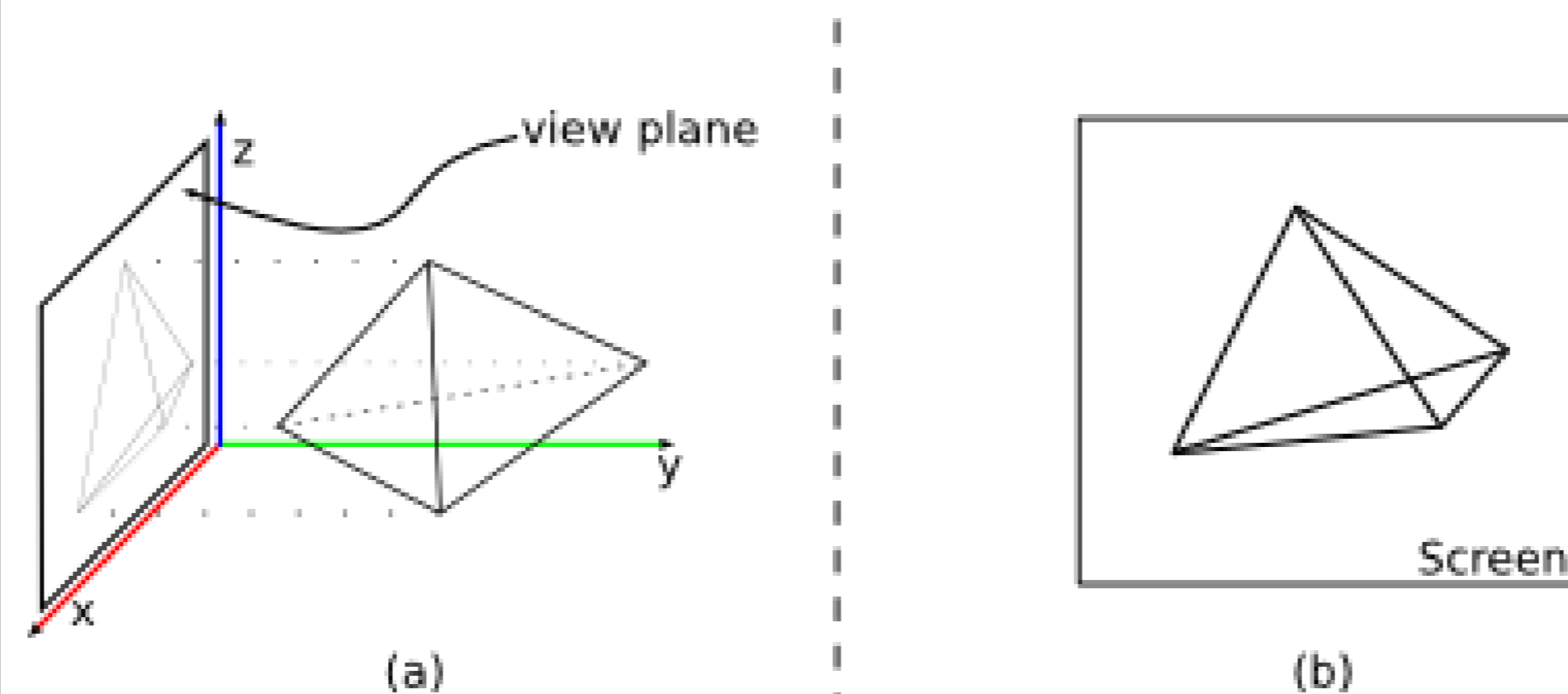
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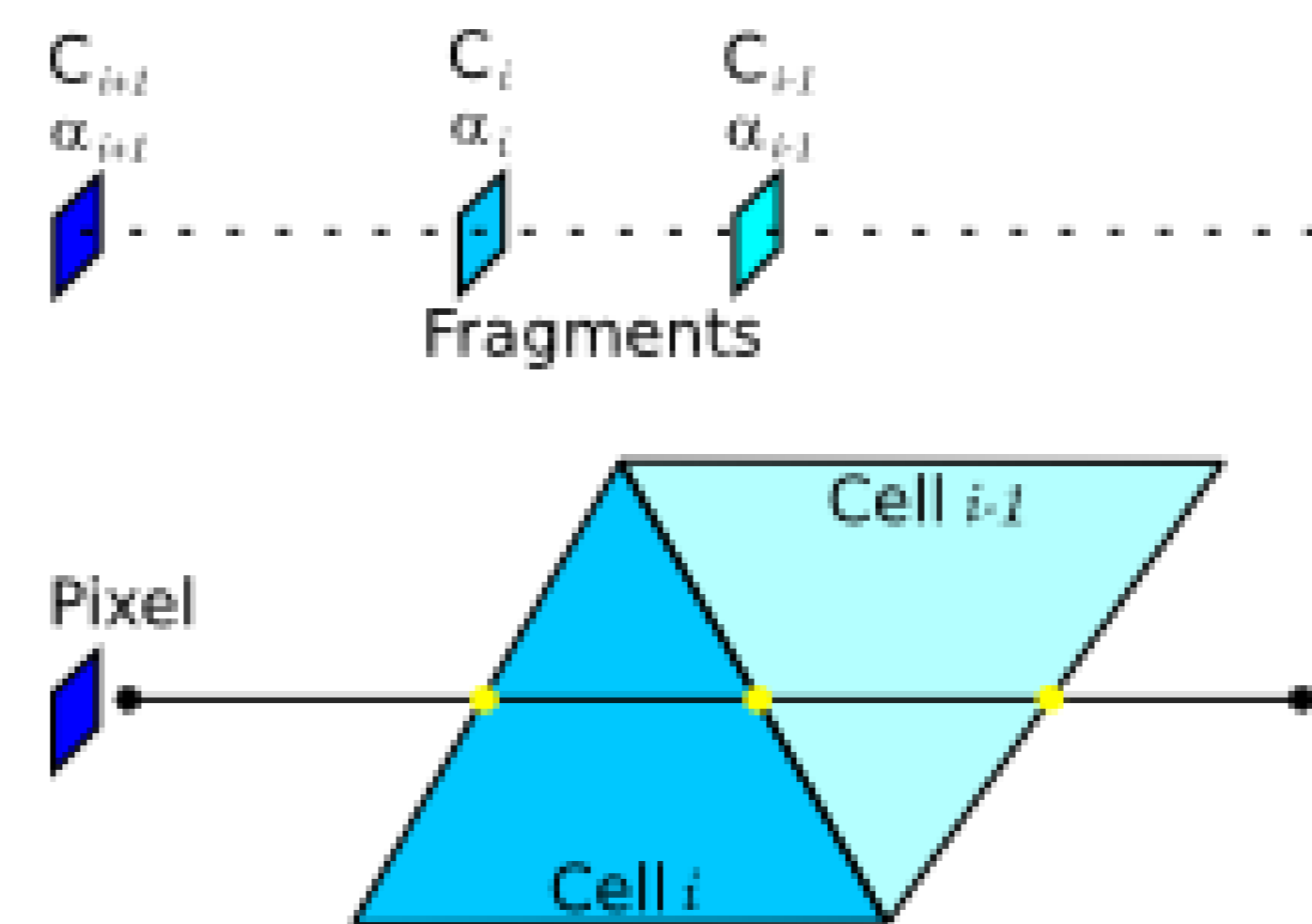
Summary

- Volume data is stored in texture memory
- First Fragment Shader computes projection data
- Second Fragment Shader computes the final color
- Partial Pre-Integration technique
- Interactive Transfer Function editing
- Over 2 Millions Tetrahedra per second

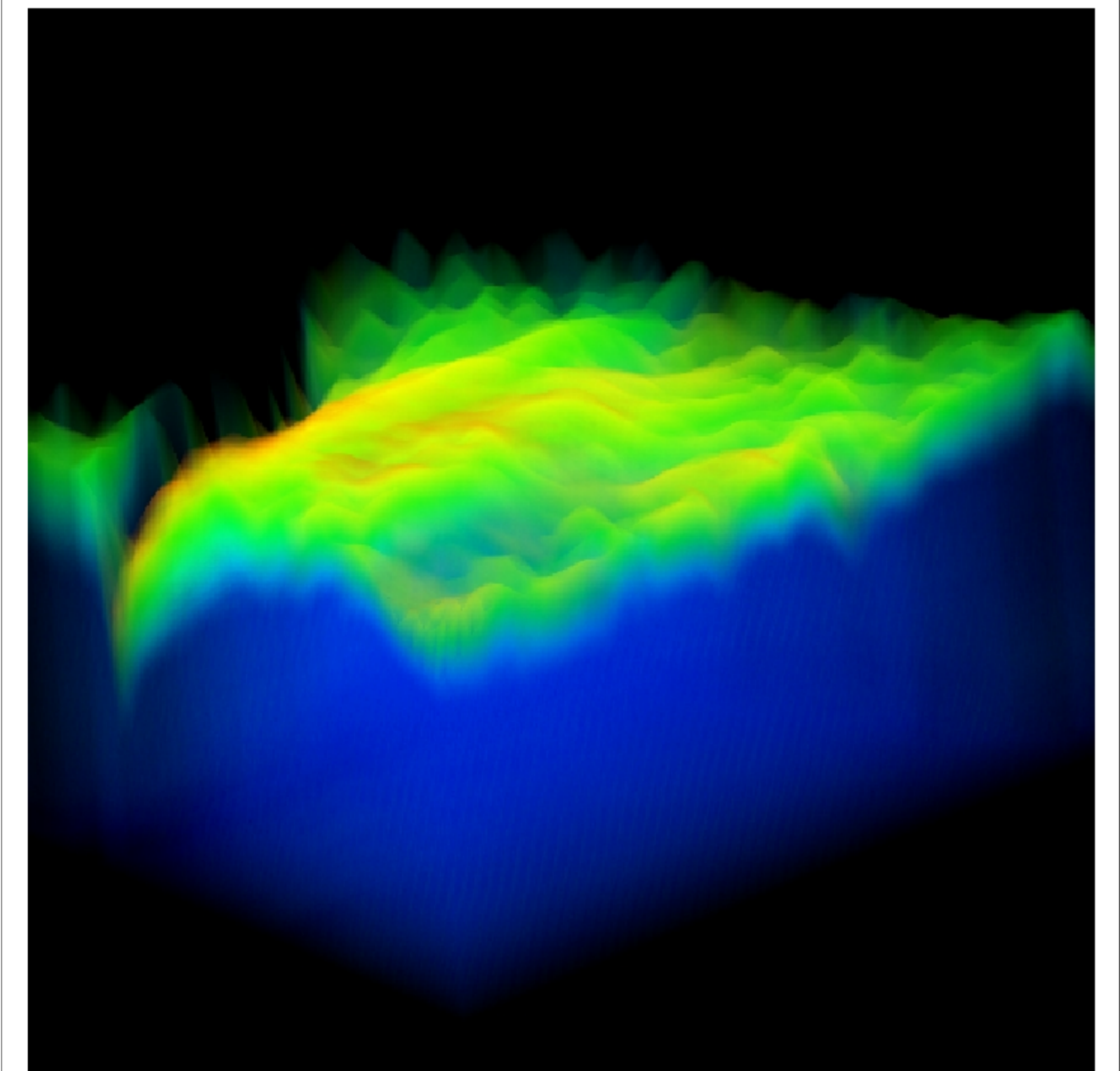
Cell Projection



Fragment Composition



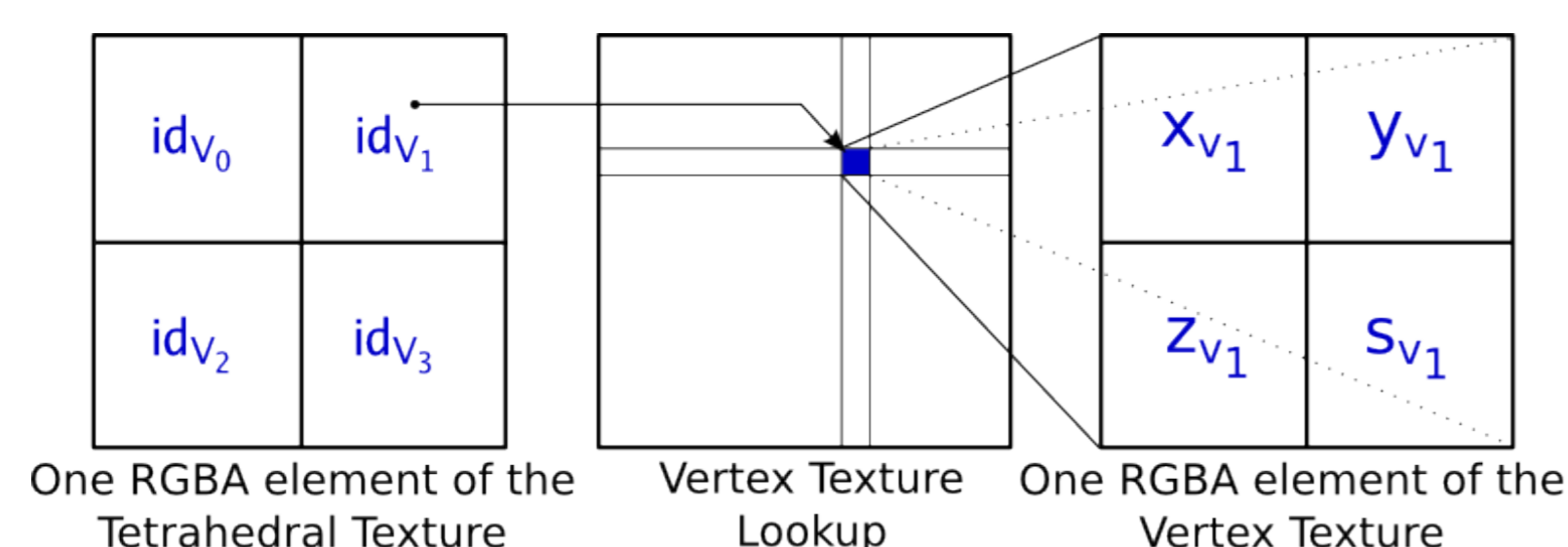
Volume Rendering



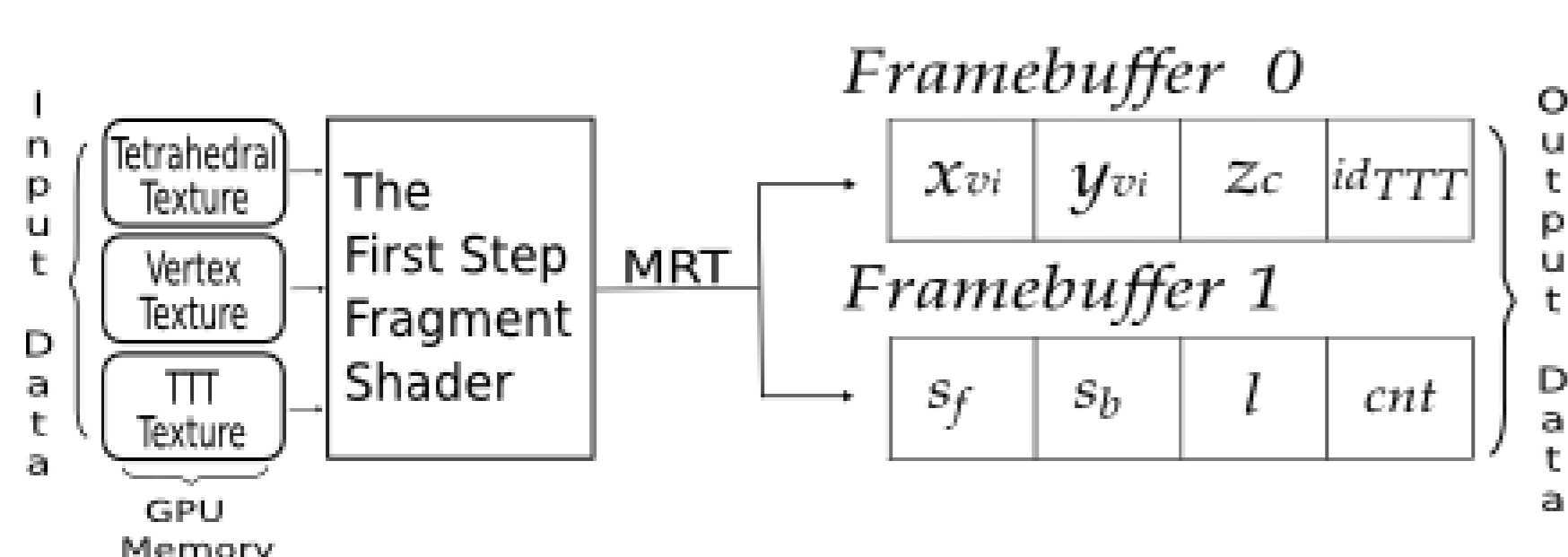
Ocean

GPU-Based

- Texture scheme



- Fragment shader output

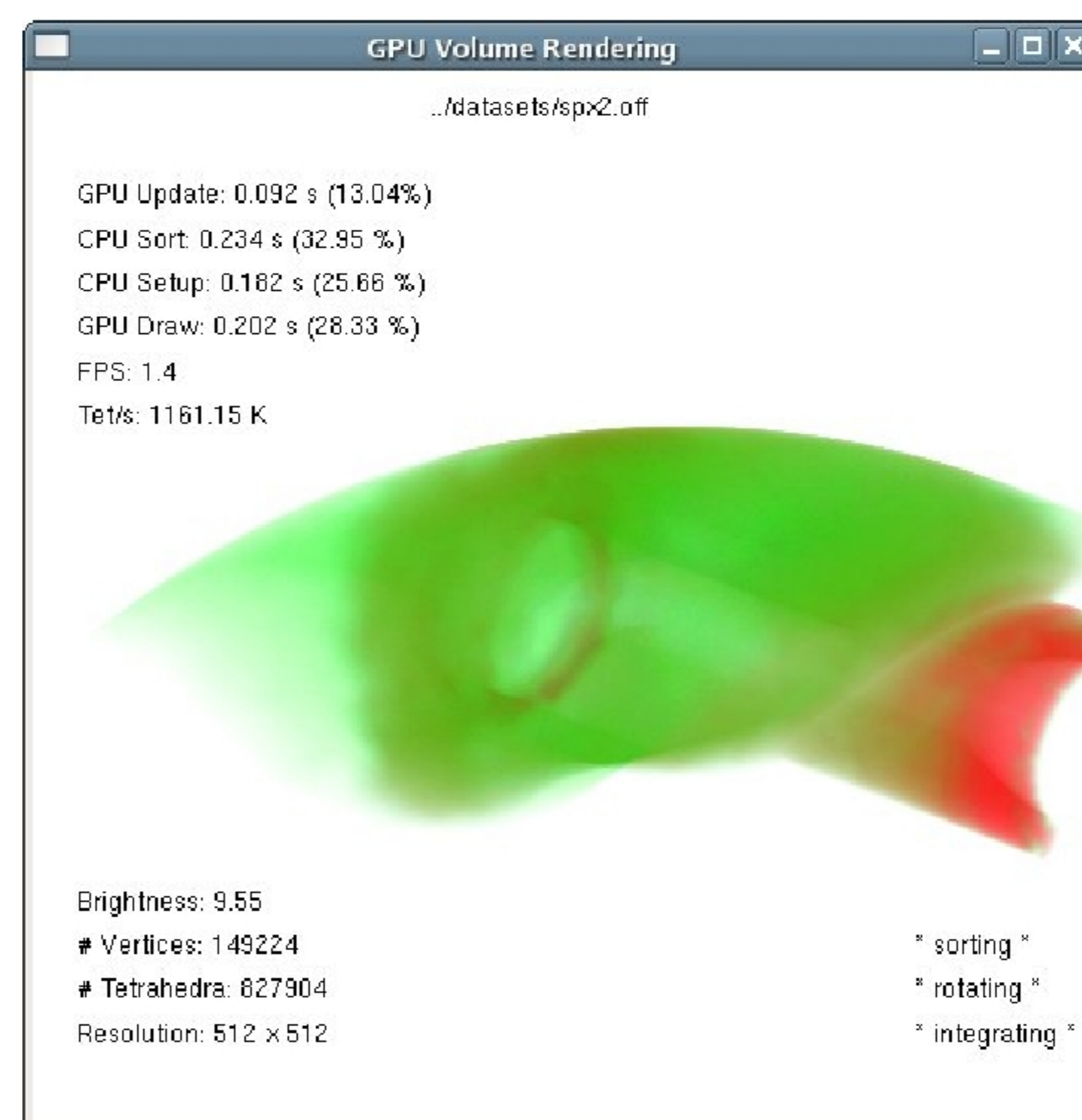


Interactive Rendering

Data set	# Verts	# Tet	fps	K Tet/s
Blunt	40 K	187 K	11.30	2119.7
Comb	47 K	215 K	9.32	2005.4
Post	110 K	513 K	4.49	2384.4
SpX	150 K	828 K	3.04	2526.9
Fuel	262 K	1.5 M	1.49	2246.0
Brain	950 K	5.5 M	0.46	2560.8

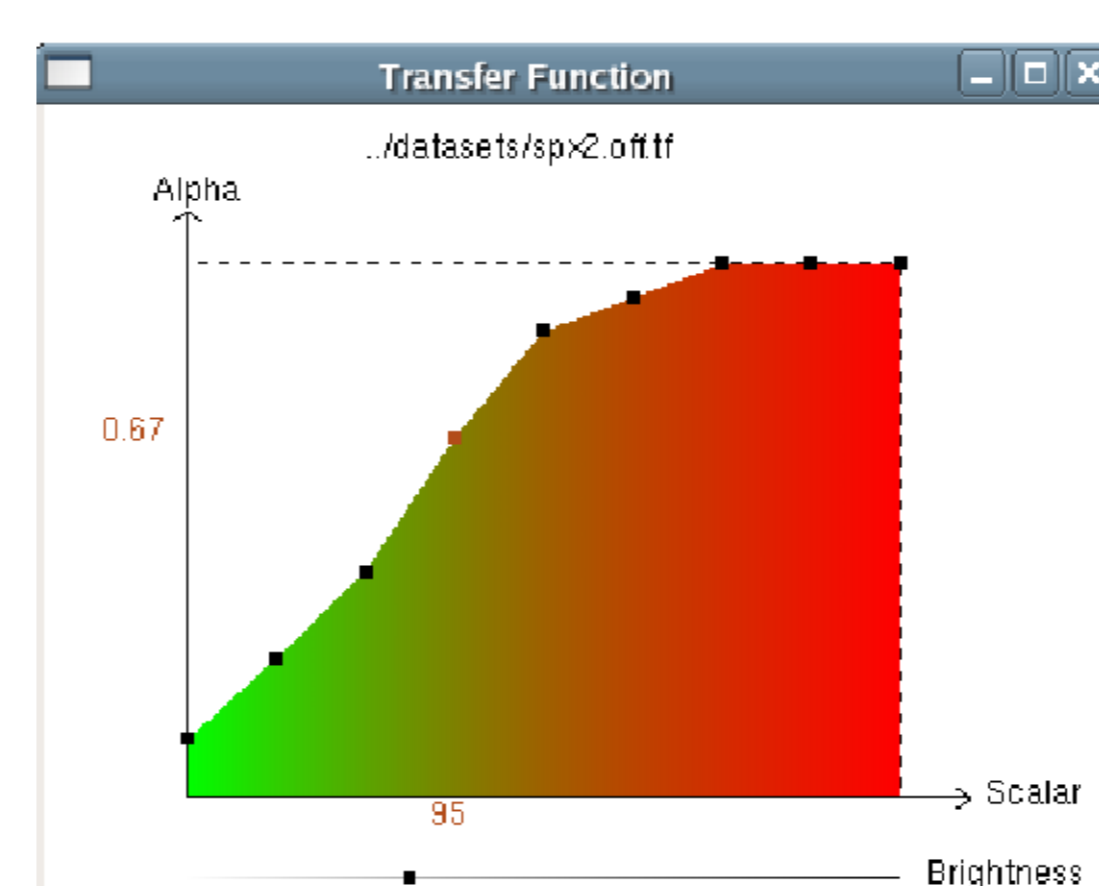
Data set sizes and average times

Interface

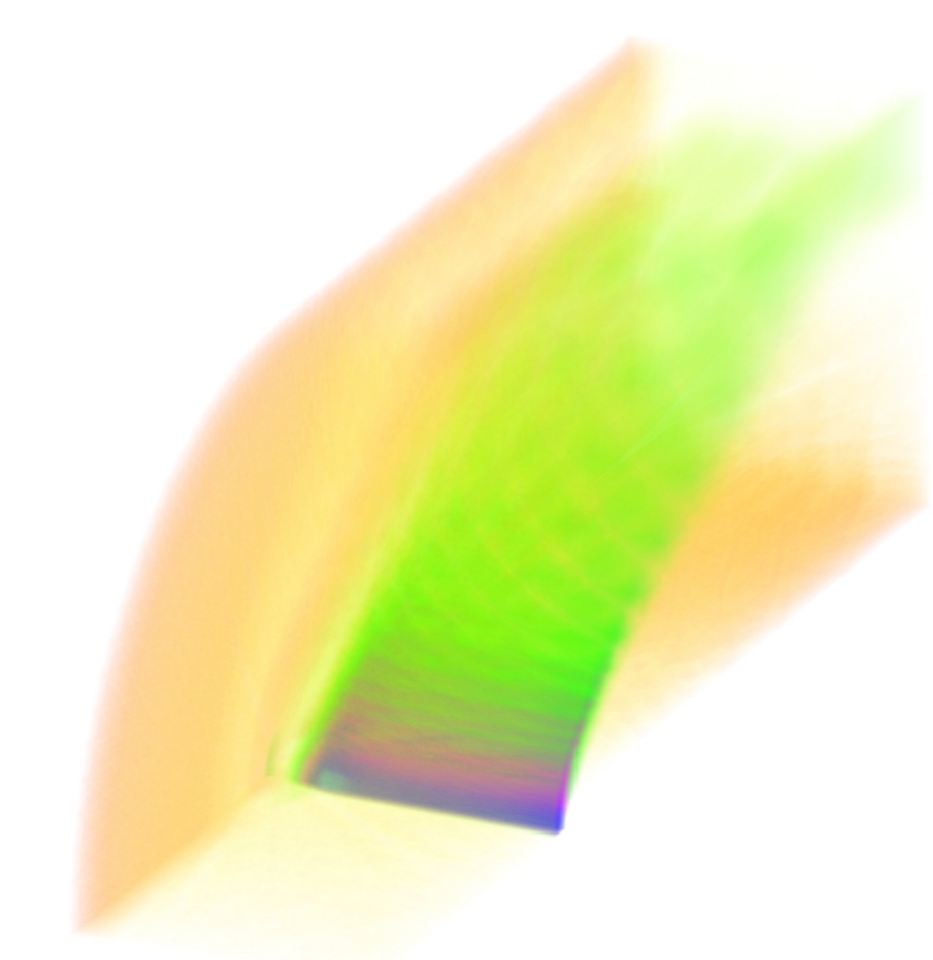


SPX

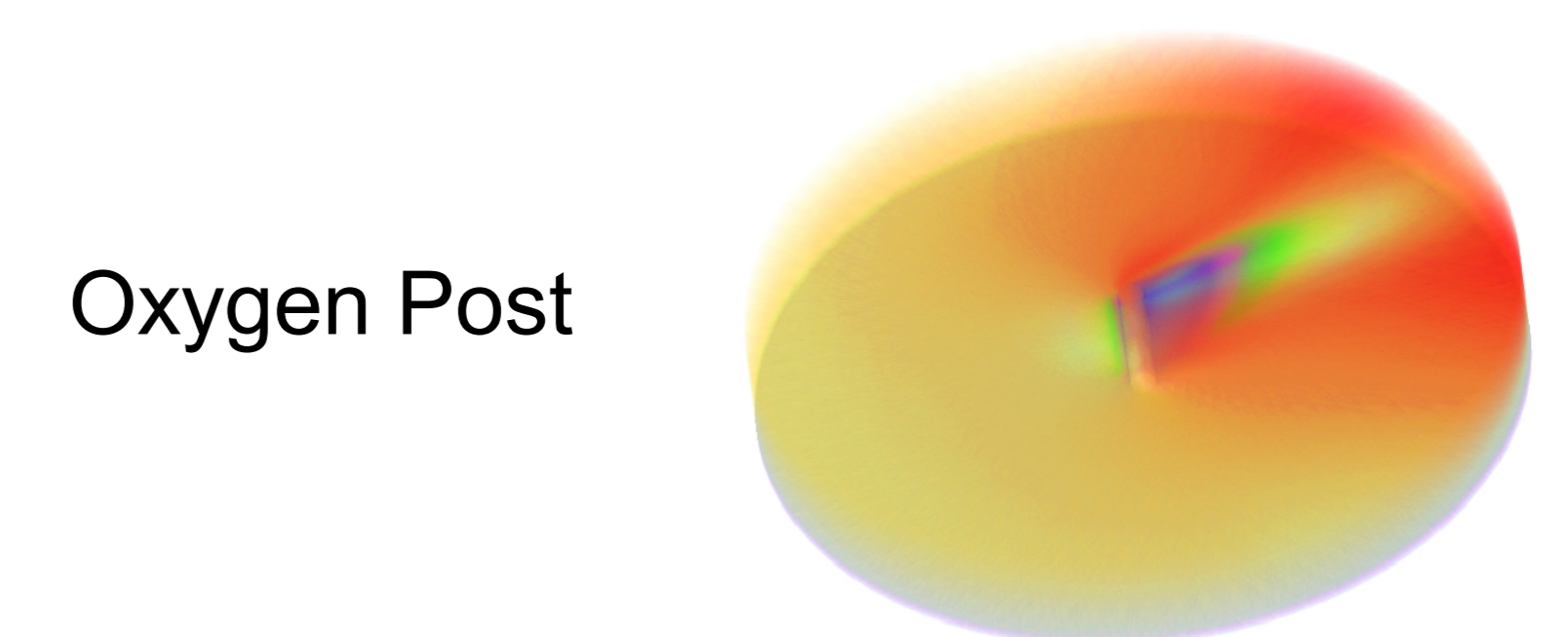
- Transfer Function editing



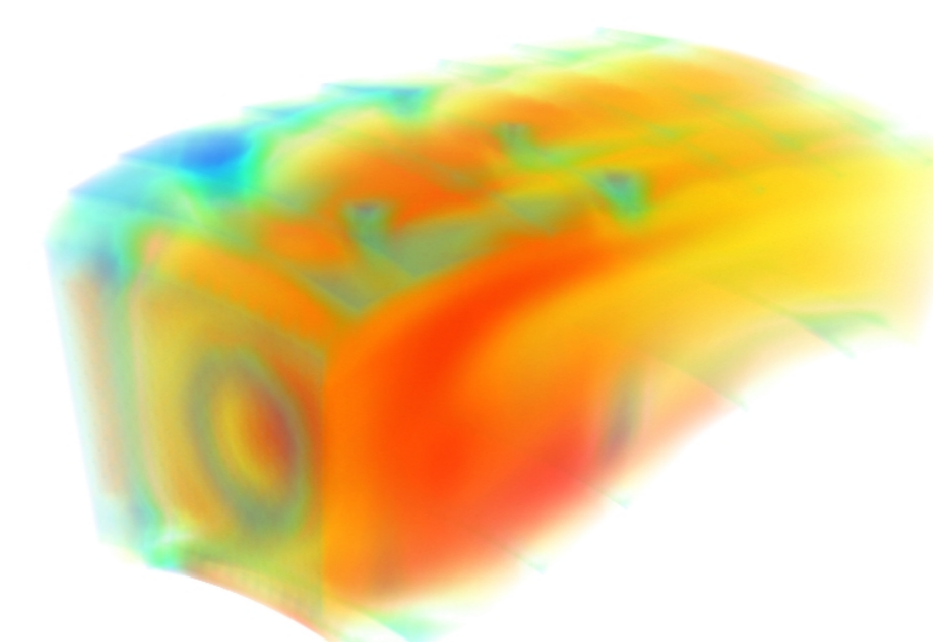
Results



Blunt Fin



Oxygen Post



Combustion Chamber