



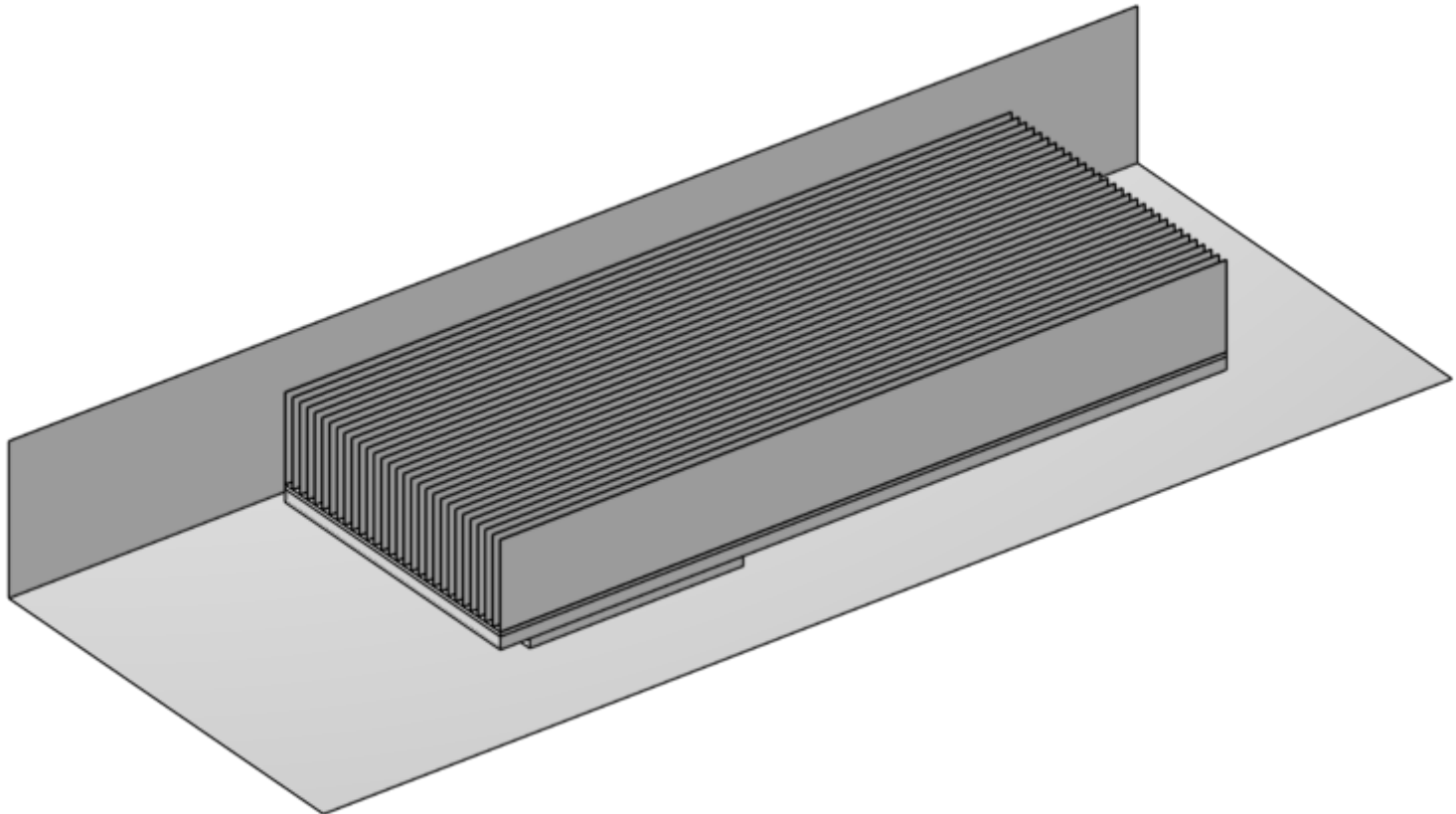
PCIe400 Thermal Model

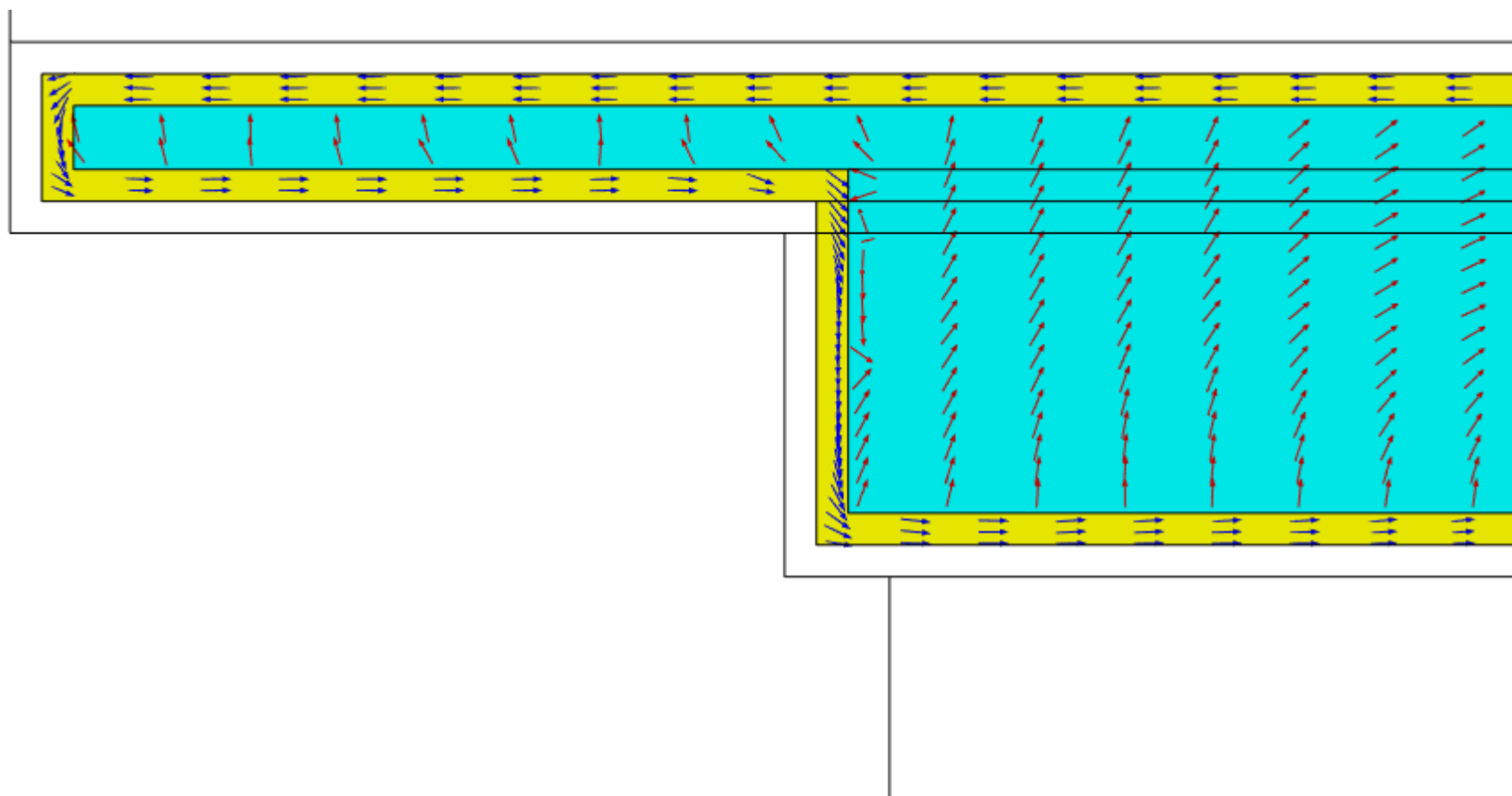
Jean-Marc NAPPA on behalf of the LAPP team



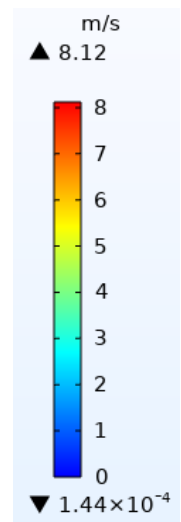
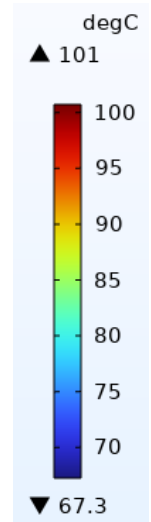
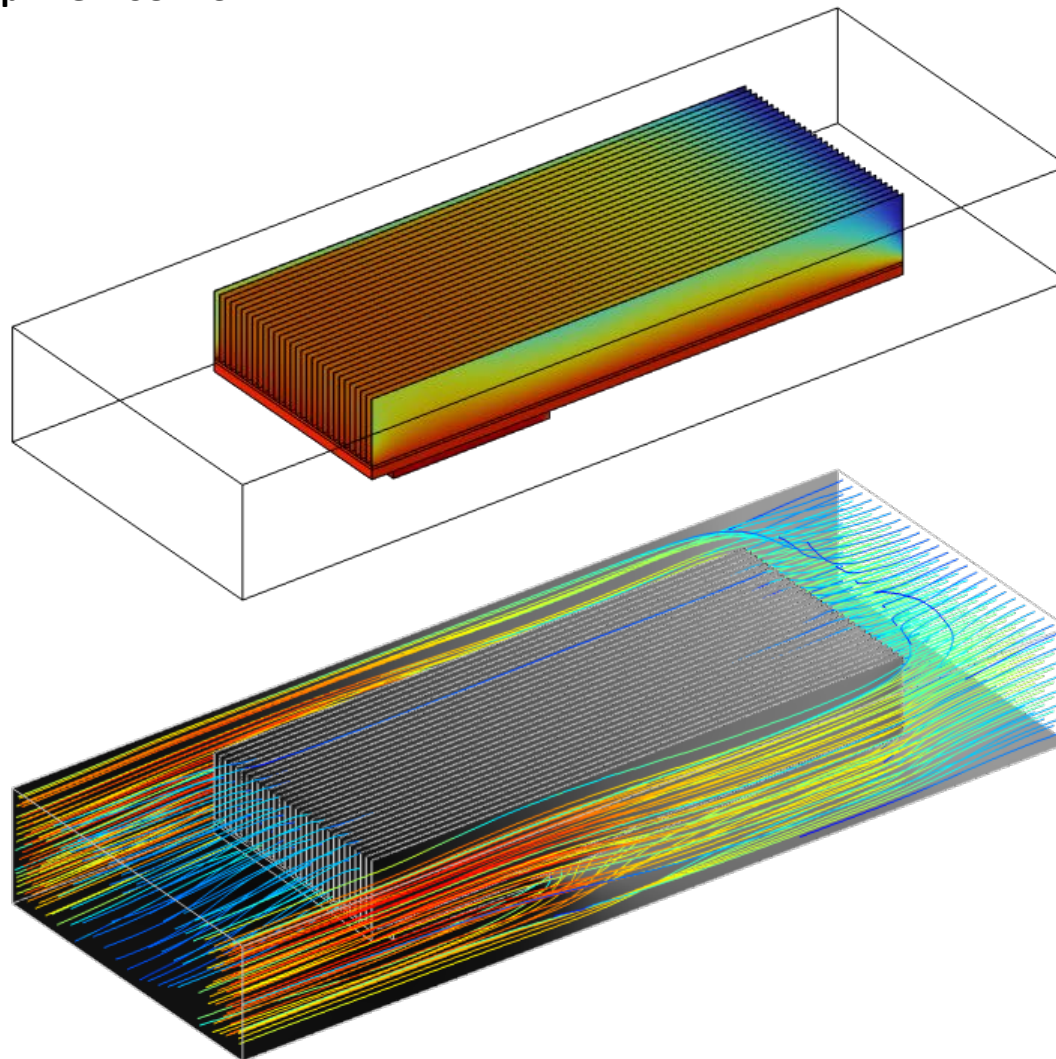
Simulation PCIe400

- **FPGA 52x42x3.5mm**
- **Vapor Chamber 177x70x3mm with Encoche 56.3x52x5.4mm (Copper)**
- **Heat Sink 177x70x25mm with Fins 30x0.15mm (Aluminum)**
- **Power FPGA 180W**
- **Volume Air 275x102x35mm**





- Air Flow 600LFM (3m/s)
- Temp Ambient 60°C
- Temp FPGA 98.7°C



Comparaison COMSOL PC vs Serveur

Produits utilisés:

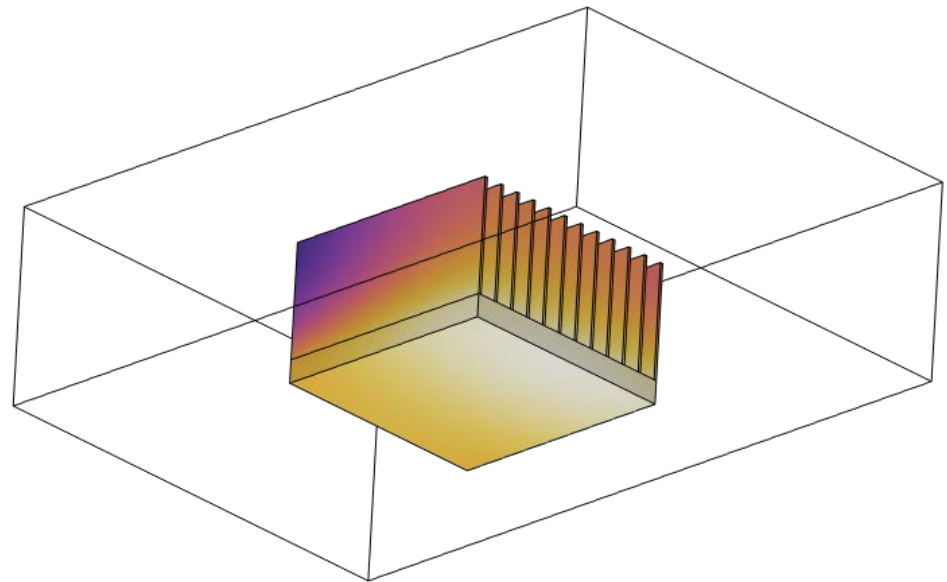
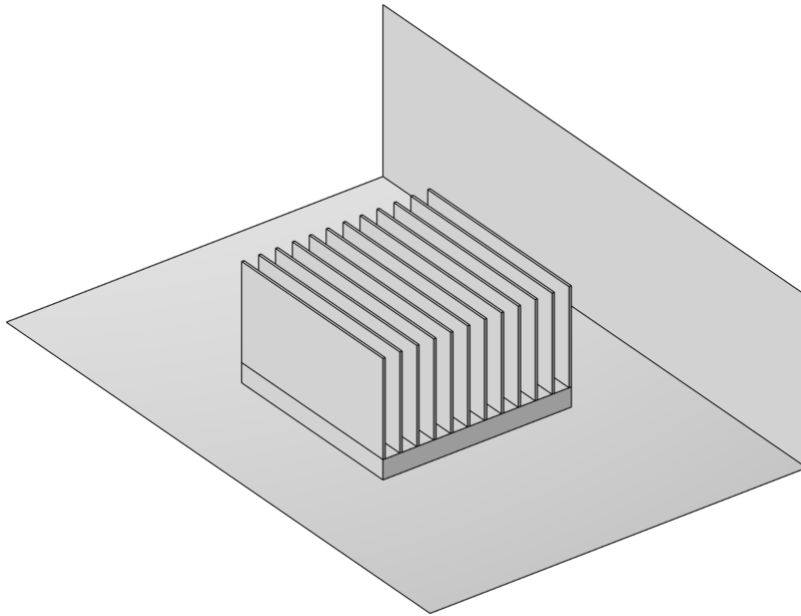
- PC : Win64 with 6 Cores and 12 Threads
- Serveur : Linux with 40 Cores and 80 Threads

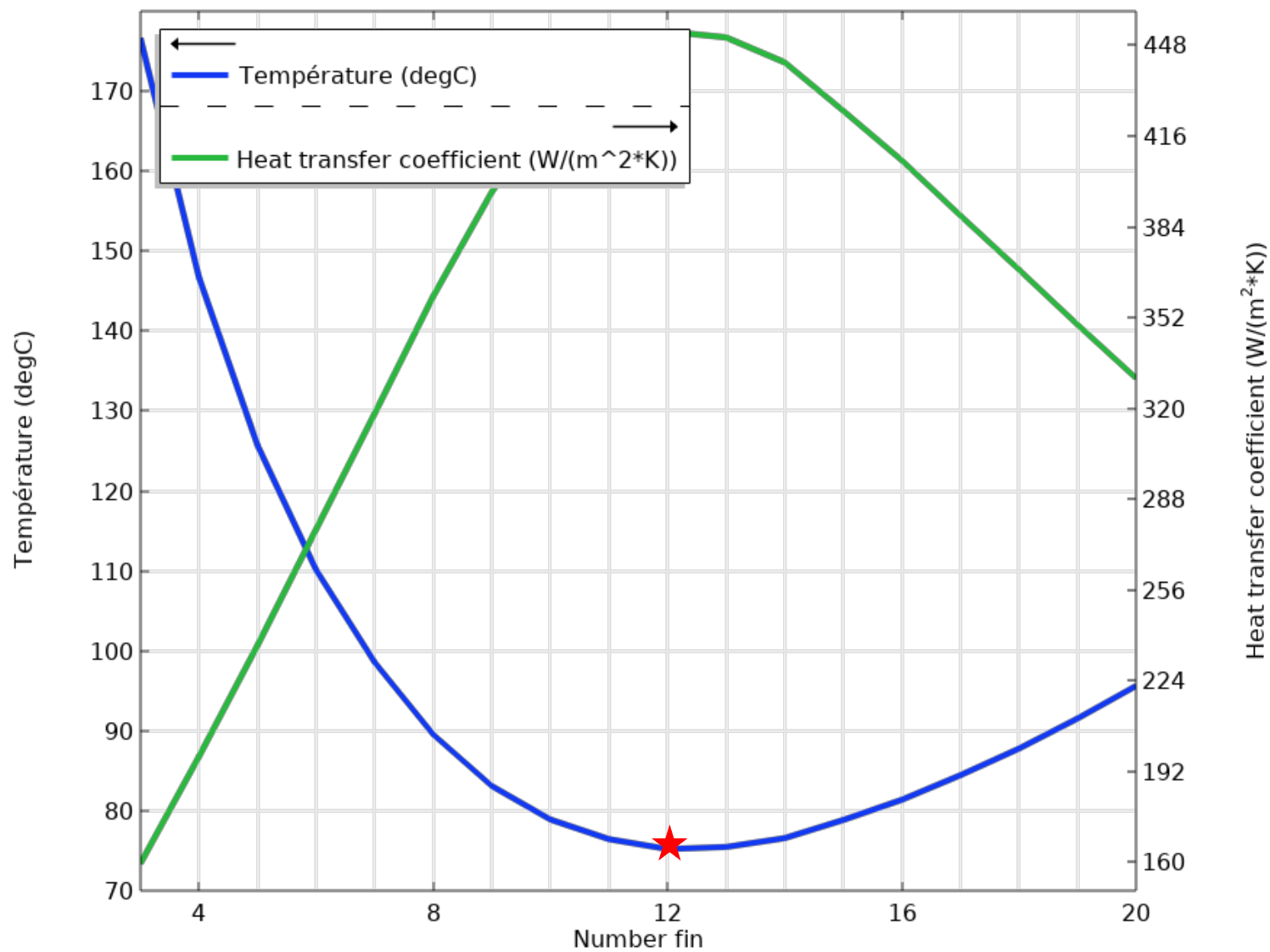
Conclusion:

- Serveur est 3.3 plus rapide que le PC

Evaluation Optimization of Fin

- Heat Sink 20x20x10mm with Fins Nx0.25mm (Aluminum)
- Power 10W
- Volume Air 60x40x17mm
- Air Flow 200LFM (1m/s)
- Temp Ambient 20°C





PCIe400 Optimization of Fin

- Heat Sink 70x190x25mm with Fins 33x0.25mm (Aluminum)
- Power 180W
- Volume Air 230x90x32mm
- Air Flow 600LFM (3m/s)
- Temp Ambient 60°C
- Bottom surface temperature 95.1°C
- Heat transfer coefficient 404.8W/(m²·K)

