Design and performance on Multi-core Multi-CPU solution for wave-front reconstruction

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Abstract:

Since the size of the detector for ongoing projects are becoming bigger and bigger, wave front reconstruction becomes a critical challenge to satisfy the calculation time requirement. Although current platform can achieve an amazingly fast performance on projects like SPHERE, for the size of ELT's 84x84 subaperture arrays, the challenge would be much harder with consideration on performance of components currently we are relying on. Two new complex reconstruction algorithms FriM and FTR now is too difficult for FPGA to implement, which left the solution to multi-core multi-cpu solution for its much better general computation task performance. The talk is mainly on these two algorithms' practical design and performance along with the standard MVM algorithm on this platform.