Capture1 Example3 用Amdahl Law求解

方案1:更改所有浮点数(FP)的CPI

$$Se = rac{T_{
m gji}$$
 இது $Se = rac{T_{
m gji}}{T_{
m gji}} = rac{CPI_{
m gif}}{CPI_{
m gji}} = 2$ $Fe = rac{T_{FP}}{T_{FP} + T_{other}} = rac{CPI_{FP} imes FP\%}{CPI_{FP} imes FP\% + CPI_{other} imes other\%} = rac{0.25 imes 4}{0.25 imes 4 + 0.75 imes 1.33} = 0.5$ $S_1 = rac{1}{1 - Fe + rac{Fe}{Sc}} = 1.33$

方案2:更改浮点数开方(FPSQR)的CPI

$$Se=rac{T_{ t D \# R agraph N agraph B agraph B agraph E}}{T_{ t D \# R agraph N agraph D agraph B agraph E}}=rac{CPI_{ t R agraph F agraph S agraph R agraph R}}{CPI_{ t D agraph B agraph F agraph S agraph R agraph F agraph S agraph R agraph R}}=rac{CPI_{FPSQR} imes FPSQR\%}{CPI_{FP} imes FP\% + CPI_{other} imes other\%}=rac{0.02 imes 20}{0.25 imes 4 + 0.75 imes 1.33}=0.2$$
 $S_2=rac{1}{1-Fe+rac{Fe}{Se}}=1.21$

结论

可见 $S_1>S_2$,但是两者差别不是很大,如果对全部的浮点数操作进行优化的话可能会耗费很多的资金成本,但是如果单纯优化浮点数开方运算的话,既可以节约一些成本又可以取得还不错的加速比,这样看来优化浮点数开方运算更具性价比。