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A Note on Terence Tao's Paper "On the Number of Solutions to 4/p=1/n_1+1/n_2+1/n_3"

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For the positive integer \$n\$, let \$f(n)\$ denote the number of positive integer solutions (n_1,\n_2,\n_3) of the Diophantine equation $$\{4\ \ n_{=1}\$ n_3}. \$\$ For the prime number \$p\$, f(p) can be split into $f_1(p)+f_2(p)$, where $f_i(p)(i=1,\,2)$ counts those solutions with exactly \$i\$ of denominators\$n_1,\,n_2,\,n_3\$ divisible by \$p.\$ Recently Terence Tao proved that $\$ \sum_{p< x}f_2(p)\ll x\log^2x\log\log x \\$ with other results. But actually only the upper bound \$x\log^2x\log\log^2x\$ can be obtained in his discussion. In this note we shall use an elementary method to save a factor \$\log\log x\$ and recover the above estimate.

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