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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(Submitted on 27 Jul 2011)

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 $$ {4\over n}={1\over n_1}+{1\over n_2}+{1\over n_3}. $$ 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.

Subjects: **Number Theory (math.NT)**

Cite as: **arXiv:1107.5394 [math.NT]**

(or **arXiv:1107.5394v1 [math.NT]** for this version)

Submission history

From: Chaohua Jia [view email]

[v1] Wed, 27 Jul 2011 05:55:52 GMT (3kb)

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