1163-33-1558 **Shaun Cooper*** (`s.cooper@massey.ac.nz`). *Some elliptic integrals in Ramanujan's lost notebook.*

In the "lost notebook" [2, p. 53] Ramanujan stated a result equivalent to

$$\int_0^x t\, f(-t)\, f(-t^5)\, t(-t^7)\, f(-t^{35})\, \mathrm{d}t = \int_0^v \frac{1}{\sqrt{\left(\frac{1}{t}+1-t\right)\left(\frac{1}{t^3}-\frac{5}{t^2}-9-5t^2-t^3\right)}}\, \frac{\mathrm{d}t}{t}$$

where

$$f(-t) = \prod_{j=1}^{\infty}(1-t^j)$$

and

$$v = x\, \frac{f(-x)\, f(-x^{35})}{f(-x^5)\, f(-x^7)}.$$

In this talk I will describe how this result fits into a larger theory, and indicate how to obtain the corresponding result involving $f(-t)\, f(-t^3)\, t(-t^7)\, f(-t^{21})$ which is new. This is joint work with T. Anusha, E.N. Bhuvan and K.R. Vasuki, [1].

References:

[1] T. Anusha, E.N. Bhuvan, S. Cooper and K.R. Vasuki, *Elliptic integrals and Ramanujan-type series for $1/\pi$ associated with $\Gamma_0(N)$, where N is a product of two small primes,* J. Math. Anal. Appl., **472** (2019) 1551–1570.

[2] S. Ramanujan, *The Lost Notebook and Other Unpublished Papers,* Narosa, New Delhi, 1988. (Received September 15, 2020)