

OBITUARY NOTICE
ATLE SELBERG (14-07-1917 TO 06-08-2007)



ATLE SELBERG is well-known for his elementary proof of the result $p_n \sim n \log n$ (as $n \rightarrow \infty$, where as usual $p_1 = 2, p_2 = 3, p_3 = 5, \dots$ is the sequence of all prime numbers) (without using the notion of even upper and lower limits) and also very much for his result $N_0(T) \geq \Delta T \log T$ (where $\Delta > 0$ is a certain constant). Here $N_0(t)$ denotes the number of zeros $(\frac{1}{2} + i\gamma, 0 < \gamma \leq T)$ of the function

$$\zeta(s) = \sum_{n=1}^{\infty} (n^{-s} - \int_n^{n+1} u^{-s} du) + \frac{1}{s-1} (s = \sigma + it, \sigma > 0).$$

This was a great improvement over the result $N_0(T) \rightarrow \infty$ as $T \rightarrow \infty$ due to G.H.HARDY and later $N_0(T) \geq \Delta_1 T$ due to G.H.HARDY and J.E.LITTLEWOOD. It may be remarked that (on Riemann Hypothesis namely $\zeta(s) \neq 0$ in $\sigma > \frac{1}{2}$)

$$N_0(T) = \frac{T}{2\pi} \log \frac{T}{2\pi} - \frac{T}{2\pi} + E(T)$$

where $E(T) = O(\log T)$ due to RIEMANN and VON MONGOLDT. SELBERG proved that $E(T) = O((\log T)(\log \log T)^{-1})$. There are many other papers of his such as the constant 2 in "SELBERG SIEVE" and many other papers which are admired by experts. It may not be out of place to record here that because of him K.RAMACHANDRA was invited

during (1970-1971) for the number theory year at Princeton, Institute for Advanced Study and that he was encouraged by contacts with SELBERG and many other mathematicians from almost all parts of the world. K.RAMACHANDRA feels the death of Prof.SELBERG as a personal loss to him. Also it may be mentioned that when R.BALASUBRAMANIAN sent his thesis as $T \rightarrow \infty$, $\frac{1}{2\pi} \int_0^T |\zeta(\frac{1}{2} + it)|^2 dt = \frac{T}{2\pi} \log \frac{T}{2\pi} + (2\gamma - 1) \frac{T}{2\pi} + O(T^{\frac{1}{3}})$ to Professor SELBERG, he received an encouraging letter.

NOTE: A.SELBERG was born in Langesund, NORWAY and died in Princeton, N.J., USA.