REFERENCES


4, pp. 555–563.


List of Publications

The publications from Ph.D. work are as below:


Appendix A

**GENERAL SOLUTION OF THE HEAT CONDUCTION EQUATION WITH THE INTEGRAL TRANSFORM TECHNIQUE**

Before examining a general treatment of the solution of the heat-conduction equation with the integral transform technique following simple example are presented in order to illustrate the basic concepts associated with the integral-transform technique.

Consider a slab $0 \leq x \leq L$ initially at temperature $F(x)$, and for times $t > 0$ the boundary surface at $x = 0$ is kept insulated and that at $x = L$ is kept at zero temperature. Temperature profile for times $t > 0$ will be determined by solving this problem with the integral transform technique.

The boundary-value problem of heat conduction is given as

\[
\begin{align*}
\frac{\partial^2 T}{\partial x^2} &= \frac{1}{\alpha} \frac{\partial T}{\partial t}, \quad 0 \leq x \leq L, \ t > 0 \\
\frac{\partial T}{\partial x} &= 0 \quad \text{at} \ x = 0, \ t > 0 \\
T &= 0 \quad \text{at} \ x = L, \ t > 0 \\
T &= F(x) \quad \text{in} \ 0 \leq x \leq L, \ t = 0
\end{align*}
\]  

(A1)

(A2)

(A3)

(A4)

Where $T = F(x, t)$

In the above system the range of the space variable is finite and the boundary conditions associated with it are of the second kind at $x = 0$ and of the first kind at $x = L$. The appropriate integral transforms and the inversion formula with respect to the $x$-variable of the temperature function $T(x, t)$ are immediately obtained from the Table 1 presented.