CHAPTER IV

CONCLUSIONS

We summarize our results as follow:

(1) The function $E(x,t)$, is given by

$$E(x,t) = \frac{1}{(2\pi)^n}\int_{\Omega} \exp\left[c^2 t\left(\left(\sum_{i=1}^{p}\xi_i^2\right)^4 - \left(\sum_{j=p+1}^{p+q}\xi_j^2\right)^4\right)^k + i(\xi,x)\right] d\xi,$$

where $\Omega \in \mathbb{R}^n$ is spectrum for any fixed $t > 0$, is the oplus heat kernel or the fundamental of the equation

$$\frac{\partial}{\partial t}u(x,t) = c^2 \oplus^k u(x,t)$$

with the initial condition $u(x,0) = f(x)$ for $x \in \mathbb{R}^n$ of the n-dimensional Euclidean space.

(2) The oplus heat kernel $E(x,t)$ has the following properties :

(2.1) $E(x,t) \in C^\infty(\mathbb{R}^n \times (0,\infty))$ the space of continuous functions with infinitely differentiable.

(2.2) $\left(\frac{\partial}{\partial t} - c^2\oplus^k\right) E(x,t) = 0, \quad \text{for} \quad t > 0.$

(2.3) $\lim\limits_{t\to 0} E(x,t) = \delta.$