and the existence of ϱ, σ such that

$$c_1 + c_3 = \varrho(b_4 + b_6), \quad c_5 + c_7 = -\varrho(b_1 + b_3),$$
$$c_2 + c_4 = \sigma(b_4 + b_6), \quad c_6 + c_8 = -\sigma(b_1 + b_3).$$

Thus $L_3 = 0$ and our Theorem follows from (2.16). QED.

Theorem 10. *Suppose*: (i) M *is compact*, (ii) $I_2 =$ const. $\neq 0$ *on* M, (iii) $K \geqq 0$ on M, (iv) $K^* > 0$ *on* $f(M) \subset N$. *Then* $K = 0$ *on* M *and* $\dim f_*(T_m(M)) \leqq 1$ *for each* $m \in M$.

Proof. From $I_2 =$ const. and (1.8),

$$(a_1 - a_4)(b_1 - b_5) + (a_2 + a_3)(b_2 + b_4) = 0,$$
$$(a_1 - a_4)(b_2 - b_6) + (a_2 + a_3)(b_3 + b_5) = 0,$$

and we may write

$$b_1 - b_5 = \varrho(a_2 + a_3), \quad b_2 + b_4 = -\varrho(a_1 - a_4),$$
$$b_2 - b_6 = \sigma(a_2 + a_3), \quad b_3 + b_5 = -\sigma(a_1 - a_4)$$

for suitable functions ϱ, σ. Thus $L_1 = 0$, and our Theorem follows from (2.2). QED.

The last theorem presents an interesting characterisation of the flat tori: In the class of compact surfaces with $K \geqq 0$ just the flat torus might be mapped into a positively curved N in such a way that $I_2 =$ const. $\neq 0$. It is obvious that the conditions (iii) + (iv) of Theorem 10 may be replaced by (iii') $K \leqq 0$ on M, (iv') $K^* < 0$ on $f(M) \subset N$.

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