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Note on a paper by H. S. Allen

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NOTE ON A PAPER BY H. S. ALLEN;

By A. F. RUSTON
(London).

In [1] Allen established (theorem 1, p. 233) that the spaces of linear functionals on dual spaces are dual spaces, *provided that the characteristic of the sfield of scalars is not two*. The purpose of this note is to remove this restriction.

In order to do this, we define an alternative bilinear functional on $F^* \times E^*$, relative to which F^* and E^* are dual whatever the characteristic of the sfield K .

Using the notation of [1], we define

$$\{g, f\} = \langle g_2, y_1 \rangle + \langle x_1, y_1 \rangle + \langle x_1, f_2 \rangle.$$

Since this can be written in the two forms

$$\langle g, y_1 \rangle + \langle x_1, f_2 \rangle \quad \text{and} \quad \langle g_2, y_1 \rangle + \langle x_1, f \rangle,$$

it is easily verified that this has all the required properties.

BIBLIOGRAPHY.

- [1] H. S. ALLEN, *Duality of the spaces of linear functionals on dual vector spaces* (*Bull. Soc. Math. France*, t. 79, 1952, p. 233-235).
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