

**Linear maps that preserve matrices annihilated at some
fixed vector by a polynomial of degree two**

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Abstract. In this paper, we characterize linear maps on the space of all $n \times n$ complex matrices which preserve the set of matrices T such that, for some fixed complex numbers s and p and some fixed nonzero vector $x_0 \in \mathbb{C}^n$, satisfy the equality

$$T^2(x_0) - sT(x_0) + px_0 = 0.$$

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