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For a commutative ring with unity $A$, let $\text{End} A$ be the category of all pairs $(P,f)$, where $P$ is finitely generated projective $A$-module and $f$ an endomorphism of $A$. The $K$-group $K_0(A)$ is a direct summand and ideal of $K_0(\text{End} A)$, and Almkvist showed that the quotient ring $W_0(A) = K_0(\text{End} A)/K_0(A)$ is a functorial subring of the ring of the big Witt vectors $W(A)$. In this paper, I determine the ring of all continuous functorial operations on $W_0(\cdot)$, and the semiring of all operations (and all continuous operations) liftable to $\text{End} A$. This solves some of the open problems listed by G. Almkvist in J. Algebra 55, 308-340 (1978; Zbl 0414.18009). Let $\mathbb{Z}[X] = \mathbb{Z}[X_1, X_2, X_3, \ldots]$. Then the results involve the $J$-topology on $\mathbb{Z}[X]$ defined by the ideals $J_n$ generated by all the $(n+1)\times(n+1)$ minors of the infinite matrix $(a_{ij})$ with $a_{ij} = X_{i+j-2}$ (define $X_0 = 1$). A key result is that the $J_n$ are prime ideals.

MSC:
13D15 Grothendieck groups, $K$-theory and commutative rings
18F25 Algebraic $K$-theory and $L$-theory (category-theoretic aspects)
13K05 Witt vectors and related rings (MSC2000)
14M12 Determinantal varieties
93B25 Algebraic methods

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$K$-theory of endomorphisms; determinantal varieties; ring of the big Witt vectors

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References:
[5] Liulevicius, A, Arrows, symmetries and functors, (1979), Univ. of Chicago, preprint
[7] Roschaleou, Y; Wyman, B.F; Kalman, R.E, Algebraic structure of linear dynamical systems, III: realization theory over a commutative ring, (\), 3404-3406 · Zbl 0264.34058
[9] Hazewinkel, M, On the (internal) symmetry groups of linear dynamical systems, (\), 362-404

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