## Simplicity of the $C^*$ -algebras of skew product k-graphs

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ABSTRACT. We consider conditions on a k-graph  $\Lambda$ , a semigroup S and a functor  $\eta:\Lambda\to S$  that ensure that the  $C^*$ -algebra of the skew-product graph  $\Lambda\times_\eta S$  is simple. Our results give some necessary and sufficient conditions for the AF-core of a k-graph  $C^*$ -algebra to be simple.