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# Cross Product by R-actions of bundles of strongly self- absorbing $C^*$ -algebras and some physical applications

**Ashwin Pande**

ashwin.pande@ahduni.edu.in

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Ahmedabad University, Commerce Six Roads, Navrangpura, Ahmedabad-380009, Gujarat, INDIA  
Email: workingpaper@ahduni.edu.in



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**Title:** Cross Product by R-actions of bundles of strongly self-absorbing  $C^*$ -algebras and some physical applications

**Author/s:** Ashwin Pande

**Address:** Ahmedabad University, Commerce College Six Roads, Navrngrpura, Ahmedabad 380009, Gujarat, India

**Email:** ashwin.pande@ahduni.edu.in

**Abstract (150 words):** Let  $X$  be the topological space associated to a finite-dimensional manifold and suppose  $p: X \rightarrow W$  is a principal circle bundle.

We consider  $C_0(X)$ -algebras  $D$  which are section algebras of locally trivial  $C^*$ -bundles over  $X$  with fiber  $A \otimes C_p$  where  $A$  is a strongly self-absorbing  $C^*$ -algebra. We discuss in detail how to generalize Topological T-duality of Mathai and Rosenberg to these algebras. We argue that we may use the  $S^1$ -action on  $X$  together with some extra data to define a Topological T-dual  $C^*$ -algebra. We also calculate some examples of this Topological T-dual. We outline a set of proposed physical applications of this formalism to String Theory.

**Keywords:** Topologica T-duality, Strongly Self-Absorbing  $C^*$ -algebras, String Theory and T-duality, Fermionic T-duality, Timelike T-duality, AdS/CFT Duality