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## $O(d+1, d+1)$ enhanced double field theory

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**ABSTRACT:** Double field theory yields a formulation of the low-energy effective action of bosonic string theory and half-maximal supergravities that is covariant under the T-duality group  $O(d, d)$  emerging on a torus  $T^d$ . Upon reduction to three spacetime dimensions and dualisation of vector fields into scalars, the symmetry group is enhanced to  $O(d+1, d+1)$ . We construct an enhanced double field theory with internal coordinates in the adjoint representation of  $O(d+1, d+1)$ . Its section constraints admit two inequivalent solutions, encoding in particular the embedding of  $D = 6$  chiral and non-chiral theories, respectively. As an application we define consistent generalized Scherk-Schwarz reductions using a novel notion of generalized parallelization. This allows us to prove the consistency of the truncations of  $D = 6$ ,  $\mathcal{N} = (1, 1)$  and  $D = 6$ ,  $\mathcal{N} = (2, 0)$  supergravity on  $\text{AdS}_3 \times \mathbb{S}^3$ .

**KEYWORDS:** Bosonic Strings, M-Theory, String Duality, String Field Theory

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