

Abstract Submitted  
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**Surface field theories of point group symmetry protected topological phases**<sup>1</sup> SHENG-JIE HUANG, MICHAEL HERMELE, University of Colorado Boulder — We identify various field theories which can be realized on the surface of three-dimensional point group symmetry protected topological (pgSPT) phases. There exist several parent field theories which can be realized on the surface of different kinds of three-dimensional pgSPT phases, depending on how the microscopic point group symmetry is embedded in the symmetry group of the field theory. The anomalies of the surface theories can be found by a dimensional reduction argument. We illustrate this idea by means of some examples, including topological crystalline insulators with  $U(1) \times Z_2^P$  symmetry, and bosonic pgSPT phases with  $C_{2v}$  symmetry.

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