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A unifying description of dark energy

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I will present an effective description of dark energy/modified gravity models involving a single scalar field. It is based on a 3+1 splitting of space-time with respect to uniform scalar field hypersurfaces. The advantage of this approach is that it can describe in the same language a vast number of existing models, including quintessence, F(R) gravity, Horndeski theories, as well as recently introduced scalar-tensor theories “beyond” Horndeski. This approach provides a unified treatment of linear cosmological perturbations, generically characterized by only five time-dependent functions. This gives an economic and systematic way to confront theoretical models with cosmological observations.

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