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Dark matter in two Higgs doublet models with local U(1)_H gauge symmetry

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In the 2HDMs, an ad hoc Z_2 symmetry is typically imposed in order to avoid
the flavor problems. We propose to introduce local U(1) Higgs flavor symmetry,
that distinguishes one Higgs doublet from the other. Then the U(1) gauge symmetry
could be the origin of the Z_2 symmetry. We study phenomenology of this model by taking into account
various theoretical and experimental constraints. We also discuss the models with a candidate
for the dark matter, the stability condition, and dark matter physics.

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