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**Title:** Renormalization-group constraints on Yukawa alignment in multi-Higgs-doublet models

**Source:** Physics Letters B, 688 (4-5): 341-344 MAY 10 2010

**Language:** English

**Document Type:** Article

**Author Keywords:** Multi-Higgs models; Renormalization group equations; Flavor changing neutral currents

**Abstract:** We write down the renormalization-group equations for the Yukawa-coupling matrices in a general multi-Higgs-doublet model. We then assume that the matrices of the Yukawa couplings of the various Higgs doublets to right-handed fermions of fixed quantum numbers are all proportional to each other. We demonstrate that, in the case of the two-Higgs-doublet model, this proportionality is preserved by the renormalization-group running only in the cases of the standard type-I, II, X, and Y models. We furthermore show that a similar result holds even when there are more than two Higgs doublets: the Yukawa-coupling matrices to fermions of a given electric charge remain proportional under the renormalization-group running if and only if there is a basis for the Higgs doublets in which all the fermions of a given electric charge couple to only one Higgs doublet. (c) 2010 Elsevier B.V. All rights reserved.

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**Publisher:** ELSEVIER SCIENCE BV

**Publisher Address:** PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS

**ISSN:** 0370-2693

**DOI:** 10.1016/j.physletb.2010.04.033

**29-char Source Abbrev.:** PHYS LETT B

**ISI Document Delivery No.:** 603XY