1043-46-137    **Heinz H Bauschke** (`heinz.bauschke@ubc.ca`), Mathematics, Irving K. Barber School, UBC Okanagan, Kelowna, BC V1V1V7, Canada, **Xianfu Wang** (`shawn.wang@ubc.ca`), Mathematics, Irving K. Barber School, UBC Okanagan, Kelowna, BC V1V1V7, Canada, and **Liangjin Yao\*** (`ljinyao@interchange.ubc.ca`), Mathematics, Irving K. Barber School, UBC Okanagan, Kelowna, BC V1V1V7, Canada. *Monotone Linear Relations: Maximality and Fitzpatrick Functions.*

We analyze and characterize maximal monotonicity of linear relations (set-valued operators with linear graphs). An important tool in our study are Fitzpatrick functions. The results obtained partially extend work on linear and at most single-valued operators by Phelps and Simons and by Bauschke, Borwein and Wang. Furthermore, a description of skew linear relations in terms of the Fitzpatrick family is obtained. We also answer one of Simons problems by showing that if a maximal monotone operator has a convex graph, then this graph must actually be affine." (Received August 25, 2008)