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Large Scale Shell Model Studies of M1 Strength in Argon and Calcium Isotopes A.F. LISETSKIY, GSI, Darmstadt, Germany, E. CAURIER, IRS, Strasbourg, France, K. LANGANKE, G. MARTINEZ-PINEDO, GSI, Germany, P. VON NEUMANN-COSEL, TU Darmstadt, Germany, F. NOWACKI, IRS, Strasbourg, France, A. RICHTER, TU-Darmstadt, Germany — We have calculated the M1 strength distributions in the $^{36-40}$Ar and ^{40}Ca isotopes within large-scale shell model studies which consider valence nucleons in the sd and pf shells. While the M1 strength in ^{36}Ar is well reproduced within the sd shell, the experimentally observed fragmentation of the M1 strength in ^{38}Ar and ^{40}Ca requires n-particle n-hole excitations with $n \geq 4$ from the sd to the pf shell. The mechanism of M1 strength fragmentation and the role of different n-particle n-hole cross-shell excitations are discussed.

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