Magnetic interactions of Cr-Cr and Co-Co impurity pairs in ZnO within a band-gap corrected density functional approach

[illegible]

(Γ)	0.73	3.23	3.44	
*/	0.19	0.47	0.28	
( )	5.64	6.43	7.40	
-ℰ	4.8	7.0	8.8 7.5	
( )	49.75	45.02	47.61	
//	1.613	1.575	1.602	
	0.379	0.386	0.383	

[14] [24] (. 25) [26,27] + . 28 . 16( ). [18] (3 4) 2.6, 3.9, 3.5, 2.8, 3.4 . 1 . [16] . 18, . 7 (ℰ[10]) (. 29) ℰ[10] 72 440 Γ- 4×4×4 · . 30. (+ +) 3ℰ [15] ν. 1.96 ( ) (+), (+), (+), (+). . 29, (ε(+/0;), → 0 + (: ± → ± +). , , ε(+/0) (. 30). , ε(+/0). +0.31 2.9 . 26, -ℰ , .