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Self-consistent evaluation of effective Coulomb interaction  $U$  and its utilization to understand the degree of localization of electrons in vanadium spinels

Sohan Lal, Sudhir K. Pandey

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## Highlights

- Effective Coulomb interaction ( $U_{eff}$ ) in vanadates is calculated selfconsistently.
- $t/U_{eff}$  ( $t$  is the transfer integral) increases with decreasing V-V distance in vanadates.
- Order of degree of localization of electrons is found to be  $\text{CdV}_2\text{O}_4 > \text{MgV}_2\text{O}_4 > \text{ZnV}_2\text{O}_4$ .
- Our work shows the importance of  $t/U_{eff}$  to understand the localization of electrons in vanadates.

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