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Superconductivity in the new Platinum Germanides APt_4Ge_{12} (A=Sr,Ba,La,Pr) HELGE ROSNER, ROMAN GUMENIUK, WALTER SCHNELLE, MICHAEL NICKLAS, ANDREAS LEITHE-JASPER, YURI GRIN, Max-Planck-Institute for Chemical Physics of Solids Dresden, Germany —
New germanium-platinum compounds with the filled-skutterudite crystal structure were synthesized. Magnetic susceptibility, specific heat, and electrical resistivity measurements find superconductivity in $LaPt_4Ge_{12}$ and $PrPt_4Ge_{12}$ below ca. 8 K. The parameters of the normal and superconducting states were established. Strong electron-phonon coupling and a crystal electric field singlet groundstate is found for the Pr compound. Electronic structure calculations show a large density of states at the Fermi level, predominantly due to Ge $4p$ orbitals. Similar behavior, albeit with lower T_c, was observed for $SrPt_4Ge_{12}$ and $BaPt_4Ge_{12}$.

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