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Anisotropic pressures in very dense magnetized matter. (English) Zbl 1181.85038
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The authors consider self gravitating matter in an external homogeneous magnetic field and investigate how anisotropic pressure may occur. To that end they first describe features of quantum mechanics and quantum statistics being used Then the transverse momentum and pressure for the electron gas, the neutron gas, and magnetized strange quark matter are derived. An outline of thermodynamics of anisotropic systems is given. The deformation of bodies due to anisotropy and self magnetization are considered. The results may apply to white dwarfs, neutron stars, and quark stars.

Reviewer: [K.-E. Hellwig \(Berlin\)](#)

MSC:

[85A15](#) Galactic and stellar structure
[80A10](#) Classical and relativistic thermodynamics
[78A35](#) Motion of charged particles
[81V05](#) Strong interaction, including quantum chromodynamics

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Keywords:

[self gravitating matter](#); [external magnetic field](#); [symmetry breaking](#); [anisotropic pressure](#); [white dwarf](#); [neutron stars](#); [quark stars](#)

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