

H38a Propagation and Transmission of Alfvén Waves in Rotating Magnetars

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We investigated the transmission process of torsional Alfvén waves in the case of the most fundamental axial mode, $m = 1$ by using the cylindrical model of aligned rotator near the polar cap region. As a result, we found that (1) two eigen-modes with different helicity states lay and each transmission rate was drastically different only in the low frequency region close to the angular velocity of the star, (2) transmission rate asymptotically approaches unity as magnetic field becomes strong, but its rate was calculated to be not more than 0.1 even at 10^{14} G typical for SGR. Further more, we will quantitatively show that energy and angular-momentum is extracted out when such Alfvén waves are released from rotating magnetar, and that Alfvén waves with low frequency are able to carry away the negative angular-momentum in the case of $m \gg 1$, provided that interstellar clouds surround statically above the star surface. This result would suggest the spin-up of the star.