Invited lecture

NEWS OF PULSAR ASTRONOMY

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The known catalog of radio pulsars (Manchester et al. 2005) contains now 2536 objects. There are among them isolated sources, neutron stars in binary systems and globular clusters, pulsars emitting X-ray and gamma-ray radiation. Some classes of anomalous pulsars demand the detailed investigations and understanding of their nature.These are Anomalous X-ray pulsars (AXPs), Soft Gamrra-ray Repeaters (SGRs), X-ray Dim Isolated Neutron Stars (XDINSs), Compact Central Objects in SNRs (CCOs), and Rotation Radio Transients (RRATs). Three type of models (magnetar, accretion and drift) were put forward to explain some peculiarities of these objects. Each of them has its advantages and some specific difficulties. They will be briefly discussed in this report. It was shown that normal pulsars can be divided by two main classes: objects with short (P< 0.1 sec) and long (P>0.1 sec) rotation periods. They will be briefly described. The known gamma pulsars (Abdo et al. 2013) possess very high magnetic inductions B_lc near the light cylinder (Malov and Timirkeeva, 2014). These fields are three order stronger than fields in gamma-quiet radio pulsars. This give the possibility to predict discoveries of new pulsed gamma-ray sources in radio pulsars with high values of B_lc. The current picture of ideas in the field of pulsar investigations will be presented.

References

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