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## PSR 0329+54, 0834+06, 1133+16射电累积脉冲轮廓相位分离谱

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### Phase-Resolved Spectra of Radio Mean Pulse Profiles for PSR 0329+54,0834+06,1133+16

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**摘要** 从相关资料中选取了3个射电累积脉冲轮廓信噪比较高的脉冲星(PSR 0329+54,0834+06,1133+16),分析了它们射电累积脉冲轮廓的特征,并对轮廓进行了相位分离,得到了射电累积脉冲轮廓相位分离谱,同时也给出了不同相位处射电辐射与频率的关系.结果显示:它们的相位分离谱表现为不同的特征,1133+16的谱前后陡中间平,而0329+54和0834+06的谱相似表现为前平后陡;根据分离谱的特征可对脉冲星进行分类,该分类有助于理解脉冲星的一些观测特性;各源在不同的相位段有不同的辐射强度与频率的相关关系,1133+16辐射强度与频率之间主要表现为负相关,并有很好的线性关系,说明1133+16的射电辐射谱为很好的幂律谱.在 $|\Phi| > 3^\circ$  区间内辐射强度与频率之间的相关系数 $R > 0.8, P < 0.03$ . PSR 0329+54射电辐射与频率之间主要表现为正相关关系,在 $4^\circ > \Phi > 3^\circ$  及  $\Phi < -3^\circ$  区间内其相关系数为 $R > 0.5, P < 20\%$ ,说明该源的射电辐射基本满足幂律关系; PSR 0834+06各波段的辐射强度与频率关系在不同相位处不尽相同,说明该源的射电辐射不能很好地满足幂律关系.

**关键词:** 射电脉冲星 累积脉冲轮廓 相位分离谱

**Abstract:** Three pulsars (PSR 0329+54,0834+06,1133+16) with high quality signal-to-noise of radio mean pulse profiles are selected from the available literature. The characteristics of the radio mean pulse profiles are analyzed for three pulsars. The phase-resolved spectrum and the correlations between radio emissions flux and frequency at the same phase are obtained. The results are as follows: The characteristics of the phase-resolved spectra are different among three pulsars. For 1133+16, the spectra is steep at two sides of pulse profiles, otherwise flatter in the middle. For 0329+54 and 0834+06, the spectra are flat at the leading part and steeper at the trailing. According to those spectra characteristics, pulsars can be classified. For 1133+16, there are good correlations between radio emission and frequency at same phase, and when  $|\Phi| > 3^\circ$ , the correlation coefficient  $R > 0.8$  and chance probability  $P < 0.03$ , which show that the radio emission of 1133+16 is power law spectrum. So, for 0329+54, when  $4^\circ > \Phi > 3^\circ$  and  $\Phi < -3^\circ$ ,  $R > 0.5, P < 20\%$ , and for 0834+06, those relationships are mutative and weakly at different phase, and means the radio emission may be not power law.

**Key words:** radio pulsars mean pulse profiles phase-resolved spectrum

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