Spectral properties of the Dirac operators on finite interval with potentials from L_p and Sobolev spaces

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We consider the Dirac operator L generated in the space $(L_2[0,1])^2$ by the differential expression

$$B\frac{d}{dx}+Q, \qquad B=\begin{pmatrix}0 & 1\\ -1 & 0\end{pmatrix}, \qquad Q=\begin{pmatrix}q_1 & q_2\\ q_3 & q_4\end{pmatrix},$$

and some regular boundary conditions. We study the cases when the entries of Q belong to the space $L_p[0,1]$, with some $p\in[1,\infty)$ or to the Sobolev space $W_2^\theta[0,1]$, $\theta\in[0,1/2)$. We find asymptotic formulae for the eigenvalues and eigenfunctions of the operator L. We find also conditions when the eigen and associated functions of this operator form a Riesz basis.