Cluster calculations for the $^6$He and $^9$Be spectra\footnote{This work is supported by NSF CREST HRD-0833184 and NASA NNX09AV07A.} IGOR FILIKHIN, VLADIMIR SUSLOV, BRANISLAV VLHOVIC, North Carolina Central University — The $^6$He and $^9$Be nuclei are considered as a mirror cluster systems $\alpha nn$ and $\alpha \alpha n$. The excitation energies of the low-lying levels for $^6$He and $^9$Be nuclei are evaluated. These cluster calculations are based on the configuration-space Faddeev equations. The method of analytical continuation in a coupling constant is used to calculate resonance parameters \cite{1}. Our goal is to show possibility for a reliable description of the $^6$He and $^9$Be within the cluster model using pair local potentials. We focus on the new $\alpha n$ interaction model proposed in \cite{1}. We assume that both, central $p$-wave component and spin-orbital component of $\alpha n$ potential mainly determine the excitation spectra structure of these nuclei. The low-lying spectrum of $^9$Be is well reproduced with this potential. The results for excitation resonance energies of the $\alpha nn(0^+, 2^+, 1^+)$ systems are presented and compared with the experimental data (http://www.tunl.duke.edu/nucldata/chain/06.shtml) and those from other calculations \cite{2}.

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