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Biexcitons in a transition metal dichalcogenide monolayer SHALVA TSIKLAURI, The City University of New York-BMCC, ROMAN KEZERASHVILI, The City University of New York-City Tech — The light emission measurements of biexcitons introduced inconsistency between theory and experiment. This significant disagreement between the experimental results and the theoretical calculations is known as the "biexciton puzzle". We suggest a new theoretical analysis of 2D biexcitons in the framework of the method of hyperspherical harmonics for solving four body Schrödinger equation [1]. We assume that electrons and holes are interacted via Keldysh potential [2]. The convergence of binding energy of the ground state of the bioexciton as a function of the grand angular momentum is studied. For the biexcitons binding energy in MoS_2 we obtain ˜20 meV. This value is remarkably close to the experimental value [3]. A comparison with results of other calculations is presented. We also study solutions of a hyperradial equation in a minimal approximation for the ground angular momentum to examine two regimes: a long range and a short range cases when the inter particle distance is much greater and much less than the screening length. For these cases, we find analytical expressions for the energy and wave function for biexciton states. 1. R. Ya. Kezerashvili, Sh. M. Tsiklauri,. Few-Body Syst. 54, 1653, (2013). 2. L.V.Keldysh, JETP Lett. **29**,658, (1979). 3. Kai Hao, Lixiang Xu, Judith F. Specht et. al. arXiv:1609.02008. This research is supported by PSC- CUNY Grant: # PSC-CUNY Award # 69536-00 47

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