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Studying Λ interactions in nuclear matter with the $^{208}_{\Lambda}$Pb(e,e'K$^+$)$^{208}_{\Lambda}$Tl reaction GUIDO MARIA URCIUOLI, OMAR BENHAR, INFN-Rome, PETR BYDZOVSKY, Nuclear Physics Institute, e near Prague , SILVIU COVRIG DUSA , Thomas Jefferson National Accelerator Facility, FRANCO GARIBALDI, INFN-Rome, TOSHIYUKI GOGAMI , Graduate School of Science, Kyoto University, PETE MARKOWITZ , Florida International University, JOHN MILLENER, Brookhaven National Laboratory , SATOSHI NAKAMURA, Graduate School of Science, Tohoku University , TOSHIO MOTOBA, Laboratory of Physics, Osaka Electro-Communication University, JOERG REINHOD , Florida International University, LIGUANG TANG, Thomas Jefferson National Accelerator Facility, VIDANA ISAAC , INFN - Catania — In view of astrophysical implications, a proposal of an experiment aiming at measuring Λ binding energies of several energy levels of the hypernucleus $^{208}_{\Lambda}$Tl was submitted to JLab Program Advisory Committee. $^{208}_{\Lambda}$Tl hypernuclei will be produced through the $^{208}_{\Lambda}$Pb(e,e'K$^+$)$^{208}_{\Lambda}$Tl reaction. Thanks to the extended region of constant density and the large neutron excess, ^{208}Pb provides the best available proxy of neutron star matter. The experiment will provide essential information, needed to constrain and improve the available models of Hyperon-Nucleon and Hyperon-Nucleon-Nucleon potentials and therefore confirm whether hyperonic three-body forces could be the solution to the so-called hyperon-puzzle, the impossibility of reconciling the existence of very massive (up to two solar masses) neutron stars with the presence of hyperons in the interior of these objects.

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