

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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بعض الوثائق الأصلية تالفة





بالرسالة صفحات لم ترد بالأصل



Study of ${}^6\text{Li}$ using Refined Resonating Group Method

By

Hazem Abdel Azim Ali

Assistant Lecturer

Department of Mathematics and Physics

Thesis

submitted to the Faculty of Engineering Cairo University in partial
fulfillment of the requirement for the degree of

Doctor of Philosophy

In

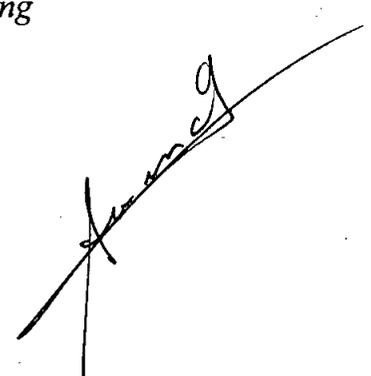
Engineering Physics

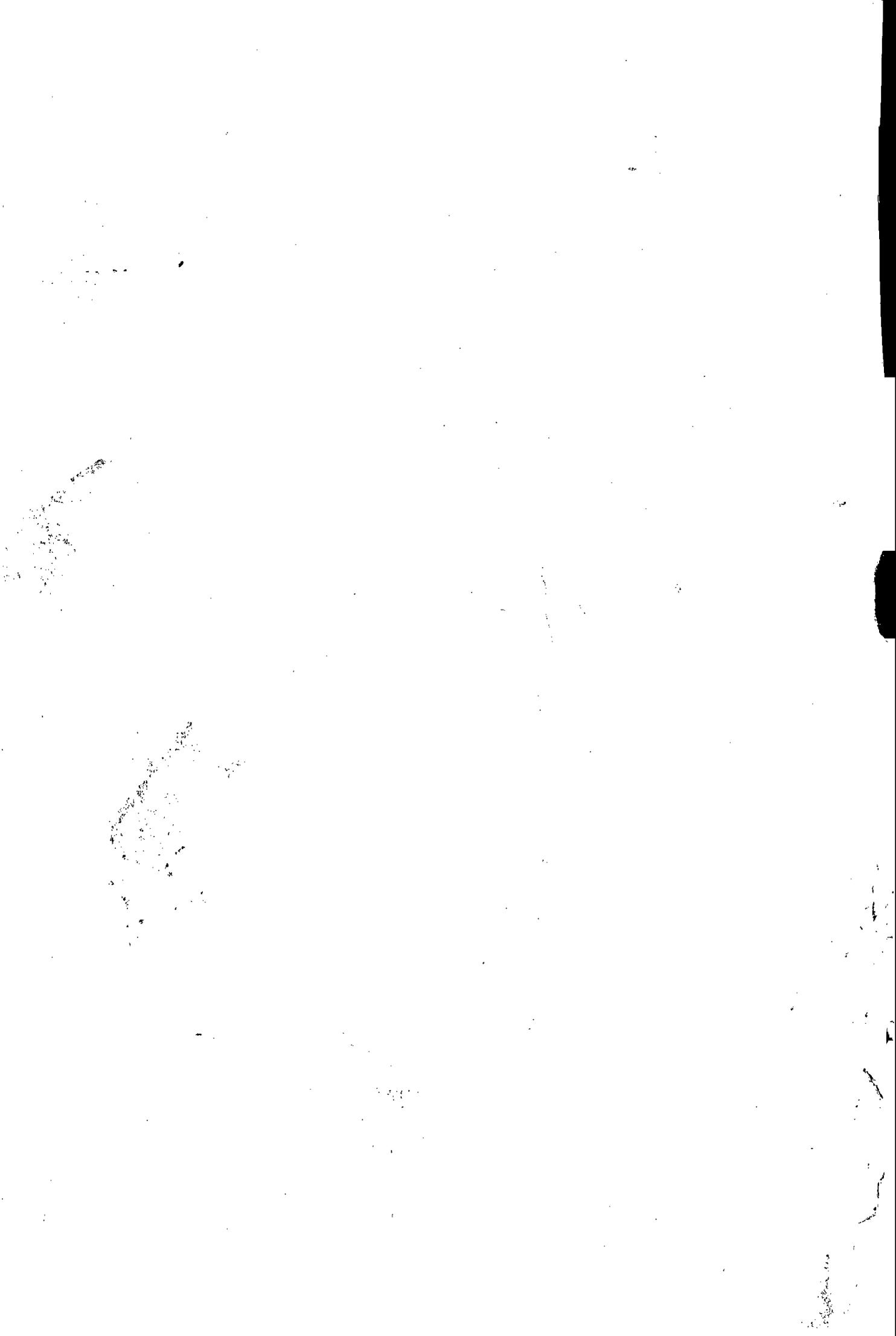
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ABSTRACT

Microscopic multi-channels calculations for the ${}^6\text{Li}$ are described by the refined resonating group method (RRGM). Local soft core nucleon-nucleon potential which contains Coulomb, central, spin-orbit and tensor parts is used in scattering and bound state calculations.

The bound state wavefunction is considered as consisting of an α -n-p configuration with S and D waves and ${}^3\text{He}$ - ${}^3\text{H}$ configuration with S wave only. Other configurations are added to the above fragmentations to consider their effect on the excitation energies of the low lying states in ${}^6\text{Li}$. The scattering wavefunction is considered consisting of 6 fragmentations α -d, ${}^3\text{He}$ - ${}^3\text{H}$, ${}^5\text{Li}$ -n, ${}^5\text{He}$ -p, ${}^5\text{Li}^*$ -n, ${}^5\text{He}^*$ -p. An energy range from α -d threshold up to 27 Mev center-of-mass energy is covered. Results of phaseshift analysis are reported and compared with experiments. Positive and negative parity transitions have been considered up to $L=4$. Threshold energies of different fragmentations are produced and compared with experimental data.

