REPORTS ON RESEARCH

8.1 Theory of the inclusive strangeness exchange reaction
by J.Dąbrowski and J.Rożynek

PL9800692

The theory of the inclusive (K^-, π^+) reaction, in which only the pion spectrum is measured, is presented. The hyperon in the final state - either Σ^- or Λ (produced via Σ conversion) - is described in the effective two-channel approach, and the cross section is calculated in the coupled-channels impulse approximation. The theory is applied to the (K^-, π^+) reaction on the ^{16}O target and compared with existing data [1], [2].

[1]   J.Dąbrowski, J.Rożynek, Few Body Systems, Supplementum 9 (1996)141-144
[2]   J.Dąbrowski, J.Rożynek, Acta Physica Polonica B27 (1996) 985

8.2 Poles of the S-Matrix for a complex potential
by J.Dąbrowski

PL9800693

Previous work [1] on the trajectories of S-matrix poles in the complex k plane resulted in a simple rule for predicting the effect of adding a small absorption to a real potential. Presently the work is extended to include the case of very strong absorption.

[1]   J.Dąbrowski, Phys. Rev. C 53 (1996)2004

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8.3 Properties of radioactive nuclei
by R.A.Gherghescu[1], Z.Patyk, J.Skalski, R.Smolańczuk and A.Sobiczewski

The stability of spherical superheavy nuclei, situated around the doubly magic nucleus 298-114 (i.e. the nucleus with proton number Z=114 and the neutron number N=184), has been studied [1-3]. Alpha-decay and spontaneous-fission half-lives have been analyzed in a multidimensional deformation space.

The results indicate that alpha decay is expected to be the main decay mode of these nuclei. Thus, the picture is similar to that obtained for deformed superheavy nuclei, situated around the doubly magic deformed nucleus 270-108 (270-Hs).

[1]   R.A.Gherghescu, Z.Patyk, A.Sobiczewski, Acta Phys. Pol. B28(1997), in press
[2]   R.A.Gherghescu, Z.Patyk, J.Skalski, A.Sobiczewski, Proc. Int. Workshop: "Research with Fission Fragments", Benediktbeuern (Germany) 1996 (World Scientific, Singapore 1997), in press
[3]   Z.Patyk, R.Smolańczuk, A.Sobiczewski, Nucl.Phys. A (1997), in press

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8.4 Non-abelian flux algebras in Yang-Mills theories
by L.Łukaszuk

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Contour gauges are discussed in the framework of the canonical formalism. We find flux operator algebras with structure constants of the underlying Yang-Mills theory [1].

[1]   L.Łukaszuk, Proceedings of XXVIII ICHEP'96, in press.