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# ON THE DIMENSION OF THE STABILITY GROUP FOR A LEVI NON-DEGENERATE HYPERSURFACE

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ABSTRACT. We classify locally defined Levi non-degenerate non-spherical real-analytic hypersurfaces in complex space for which the dimension of the group of local CR-automorphisms has the second largest positive value.

## 1. Introduction

Let $M$ be a real-analytic hypersurface in $\mathbb{C}^{n+1}$ passing through the origin. Assume that the Levi form of $M$ at 0 is non-degenerate and has signature $(n-m,m)$ with $n \geq 2m$. Then in some local holomorphic coordinates $z=(z_1,\dots,z_n)$, $w=u+iv$ in a neighborhood of the origin, $M$ can be written in the Chern-Moser normal form (see [CM]), that is, given by an equation

$$v = \langle z,z\rangle + \sum_{k,\bar{l}\geq 2} F_{k\bar{l}}(z,\overline{z},u),$$

where $\langle z,z\rangle = \sum_{\alpha,\beta=1}^{n} h_{\alpha\beta} z_\alpha \overline{z_\beta}$ is a non-degenerate Hermitian form with signature $(n-m,m)$, and $F_{k\bar{l}}(z,\overline{z},u)$ are polynomials of degree $k$ in $z$ and $\bar{l}$ in $\overline{z}$ whose coefficients are analytic functions of $u$ such that the following conditions hold:

$$\begin{array}{rcl} \mathrm{tr}\, F_{2\bar{2}} & \equiv & 0, \\ \mathrm{tr}^2\, F_{2\bar{3}} & \equiv & 0, \\ \mathrm{tr}^3\, F_{3\bar{3}} & \equiv & 0. \end{array} \tag{1.1}$$

Here the operator tr is defined as

$$\mathrm{tr} := \sum_{\alpha,\beta=1}^{n} \hat{h}_{\alpha\beta} \frac{\partial^2}{\partial z_\alpha \partial \overline{z}_\beta},$$

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