BULLETIN OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 83, Number 3, May 1977

RESEARCH ANNOUNCEMENTS

The purpose of this department is to provide early announcement of new results of such immediate importance to a substantial set of mathematicians that their communication to the mathematical community cannot await the normal time of publication. Research Announcements are communicated to the Bulletin by members of the Publications Committees listed on the inside back cover; manuscripts should be sent directly to any one of them. Each communicator is limited to accepting not more than six announcements each year; announcements are limited to 100 typed lines of 65 spaces each.

[*Note.* The criteria described above are new; in the transition period they will not necessarily be met by the announcements appearing in this issue.]

ON ALMOST MINIMALLY ELLIPTIC SINGULARITIES

BY STEPHEN SHING-TOUNG YAU[1]

Communicated by S. S. Chern, January 3, 1977

Let p be the unique singularity of a normal two-dimensional Stein space V. Let $\pi: M \longrightarrow V$ be a resolution. It is known that dim $H^1(M, \mathcal{O})$ is independent of resolution. In [1], M. Artin developed a theory for those singularities with dim $H^1(M, \mathcal{O}) = 0$. Recently Laufer [5] has developed a theory for those singularities which has dim $H^1(M, \mathcal{O}) = 1$ and ${}_V\mathcal{O}_p$ (the local ring of germs of holomorphic functions at p) is Gorenstein. Although the title of this paper is *Almost minimally elliptic singularities*, our main interest is to build up a theory for those singularities which has dim $H^1(M, \mathcal{O}) = 2$ and ${}_V\mathcal{O}_p$ is Gorenstein. All undefined terms and notations are standard in [5] and [7]. It is a pleasure to acknowledge the help and encouragement of Professor Henry Laufer in this research. We also like to thank Professor Bennett, Professor Kuga and Professor Sah for their discussion of Mathematics.

1. General theory. Throughout this paper, E will denote the minimally elliptic cycle and Z will denote the fundamental cycle. A will denote $\pi^{-1}(p)$.

DEFINITION 1.1. Let $\pi: M \longrightarrow V$ be the minimal good resolution of a normal two-dimensional Stein space with p as its only weakly elliptic singular point. Suppose p is not a minimally elliptic singularity, i.e. $|E| \neq \pi^{-1}(p) = \bigcup A_i$. If for all $A_i \not\subseteq |E|$ and $A_i \cap |E| \neq \varnothing$, then $A_i \cdot Z < 0$. We call p an *almost minimally elliptic singularity.*

PROPOSITION 1.2. *Suppose p is an almost minimally elliptic singularity and ${}_V\mathcal{O}_p$ is Gorenstein, then $H^1(M, \mathcal{O}) = \mathbf{C}^2$.*

AMS (MOS) subject classifications (1970). Primary 32C40, 32C45; Secondary 14J15.

[1]Supported in part by NSF grant MCS 72-05055 A04.