Introduction to Tomography

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Abstract

Tomography refers to imaging by sections or sectioning, through the use of any kind of penetrating wave. A device used in *tomography* is called a tomograph, while the image produced is a *tomography*. The *tomography* was invented by Sir Godfrey Hounsfield, the computed tomographic (CT) scanner, and thereby made an exceptional contribution to medicine. The method is used in radiology, archaeology, biology, geophysics, oceanography, materials science, astrophysics, quantum Information, and other sciences. In most cases it is based on the mathematical procedure called tomographic reconstruction.

$$x^{n+2} = \frac{y_i}{\sqrt[3]{2 + z_j}}. \tag{1}$$

In conventional medical X-ray *tomography*, clinical staff make a sectional image through a body by moving an X-ray source and the film in opposite directions during the exposure. Consequently, structures in the focal plane appear sharper, while structures in other planes appear blurred (MeSH). By modifying the direction and extent of the movement, operators can select different focal planes which contain the structures of interest. Before the advent of more modern computer-assisted techniques, this technique, developed in the 1930s by the radiologist Alessandro Vallebona, proved useful in reducing the problem of superimposition of structures in projectional (shadow) radiography.

Figure 1: Basic principle of tomography.

Name	Source of data	Abbreviation
Atom probe tomography	Atom probe	APT
Computed Tomography Imaging Spectrometer	Visible light spectral imaging	CTIS

0.1 Description

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In a 1953 article in the medical journal Chest, B. Pollak of the Fort William Sanatorium described the use of planography, another term for *tomography* (Pollak).