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THEORY AND APPLICATION OF FACTOR ANALYSIS IN RADIONUCLIDE DYNAMIC STUDIES.

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FACTOR ANALYSIS HAS BEEN APPLIED AND TESTED IN NUCLEAR MEDICINE SINCE THE PRESENTATION BY DI PAOLA ET AL IN 1975.

IN THIS PRESENTATION THE THEORY AND ALGORITHM OF FACTOR ANALYSIS WILL BE SHOWN.

THE ALGORITHM CONSISTS OF NEXT THREE PHASES.

1. OR THOGONAL ANALYSIS.
2. OBLIQUE ANALYSIS.
3. FACTOR IMAGE RECONSTRUCTION.

WE ADMITTED THE FOLLOWING ADVANTAGES IN FACTOR ANALYSIS.

1. NO EXPECTATION ABOUT ANATOMICAL AND DISEASE DETAILS.
2. AUTOMATICAL FACTOR CURVES AND IMAGES CREATION, WITHOUT ROI DETERMINATION.
3. CAN REDUCE ORIGINAL INFORMATION INTO SEVERL CURVES AND IMAGES.
4. CAN DEVIDE OVERLAPPING ORGANS INTO FACTOR IMAGES.

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FACTOR ANALYSIS ALGORITHM. M.Hunault. Sopha Medical S.N.I. C.Thol. Sopha Medical S.N.I.France. H.Yamasaki and K.Miyake. Marubun Corp.

Factor Analysis is a general scientific method for analyzing data which has found some application in Nuclear Medicine.

What does Factor Analysis mean, from which algorithm is it issued? The purpose here is to give an answer to these questions with common words.

After a first general view, we consider the preparatory phase. That is sampling and threshold selection with the definition of the "trixels".

The next step is the arthogonal analysis: reconstruction of the space of trixels (vector space of dimension two).

Cubic analysis: extraction of the physiological factors by determination of the optimum simplex by means of an iterative processing.

At the end, the culcation of factor images is the last step of this algorithm.

Factor Analysis is used in Nuclear Medicine for clinical applications, but it can be used also as a technique to define more precisely a region of interest or some numerical parameters.

## 622

SOME OF THE FEATURES OF PHILIPS SUPER-CONDUCTIVE MAGNETIC RESONANCE SYSTEM "GYROSCAN"

M. MURASE NIHON PHILIPS CORP,  
Medical Systems Division, Tokyo

The explanation of Philips' unique measures the methods of which for RF screen and Magnetic Shielding under site-planning and for reducing liquid helium consumption of Superconductive Type Magnetic Resonance System.

## 623

SHIMADZU SUPERCONDUCTING MRI SYSTEM. K. Shimizu and S. Oikawa. Shimadzu Corporation, Kyoto.

Shimadzu Corporation has already developed a resistive MRI system, SMT-20, which has the highest static magnetic field strength (0.2 Tesla) among the resistive type MRIs. SMT-20 received the approval of the Ministry of Welfare in the spring of 1984 and is now contributing to the diagnosis in the clinical fields. On the other hand, Shimadzu Corporation has also developed a superconducting MRI system in order to obtain higher quality images and has already finished clinical evaluations at 0.35 and 0.5 Tesla. At present, in continuing collaboration with the medical institutions, clinical investigations are being conducted, at the same time various researches and developments for improving the MRI systems are being advanced, which include the developments in the RF coils, for example, the surface coils, the gating method and compensating method for the motion of heart and respiration, quantitative measurement of blood flow, fast imaging, 3D imaging, chemical shift imaging, generation and practical use of the various calculated images and so on. Keeping pace with these developments and researches, the developments of commercial type system which offer conveniences in a variety of functions for scanning and high throughput are being proceeded. A portion of the results to be obtained from these developments will be reported.