

高エネルギー二次粒子照射場の特性評価に係わる研究

Study of specific properties on high energy secondary particle field

目的 Purpose

高エネルギー加速器を用いた二次粒子照射場の特性評価
二次粒子の主成分である中性子に対して、強度・エネルギー分布の測定
Specific properties on high energy secondary particle field using high energy accelerator
Energy and intensity distribution of neutrons which is main component of secondary particles

方法 Method

欧州原子核研究機構(CERN)での24GeV/c陽子からの二次粒子測定
高エネルギー成分、定エネルギー成分、誘導放射能を測定し場を評価
Secondary particle measurement for 24 GeV/c proton at CERN
Evaluation of the field through High energy neutron, low energy neutron and induced activity

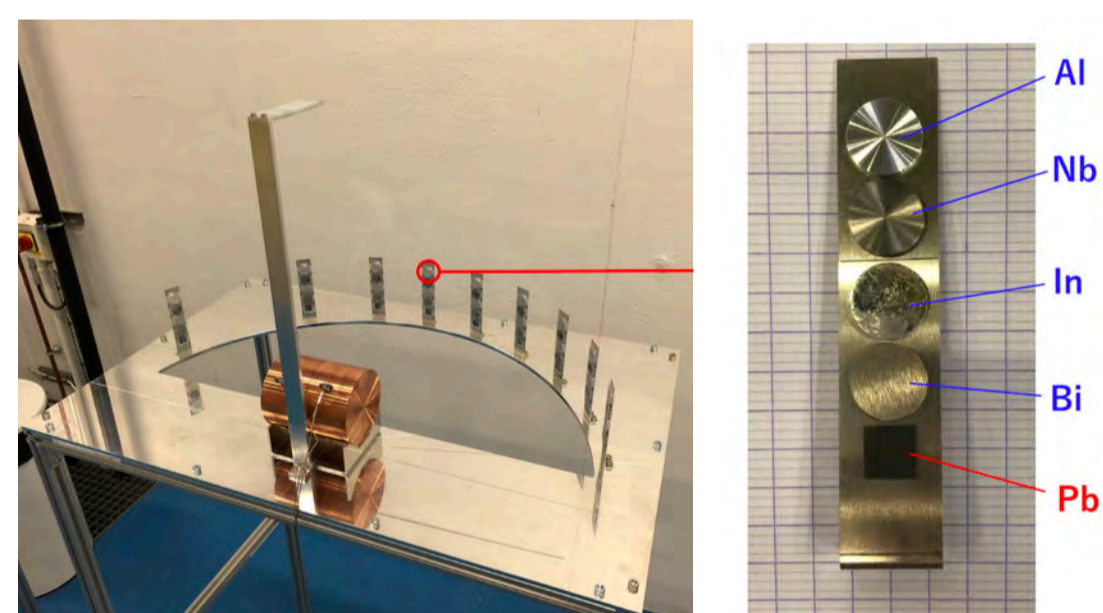
展望 Prospect

測定手法を確立し、異なる手法間・モデルシミュレーションとの相互比較
ファクターの範囲で一致した。測定量を用いた新たな手法の開発が望まれる。
Establish methodology for the field. Cross comparison among results obtained by different methods, and model simulations
The results are in agreement within a factor. New method will be developed to determine neutron spectrum using measured quantities in this experiment

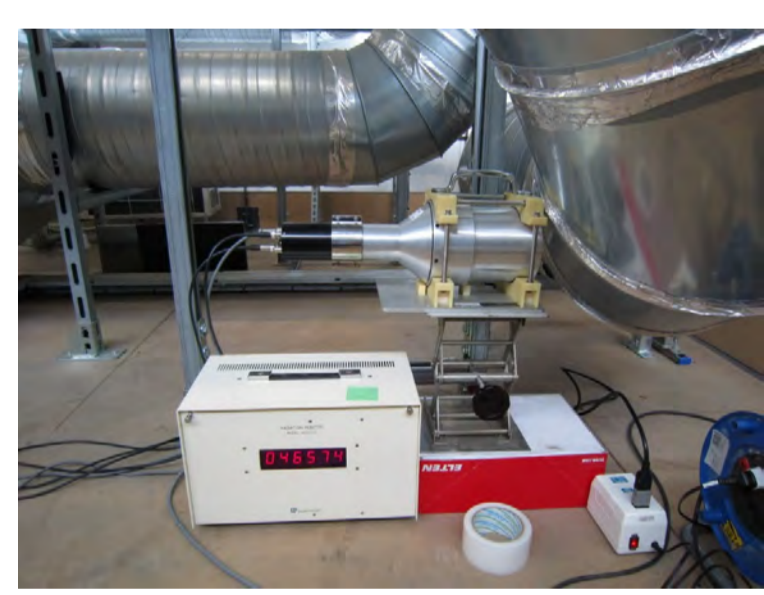
実験 - 複数の手法を用いて場の特性を調査

Experiment - Several techniques are adopted to identify the field

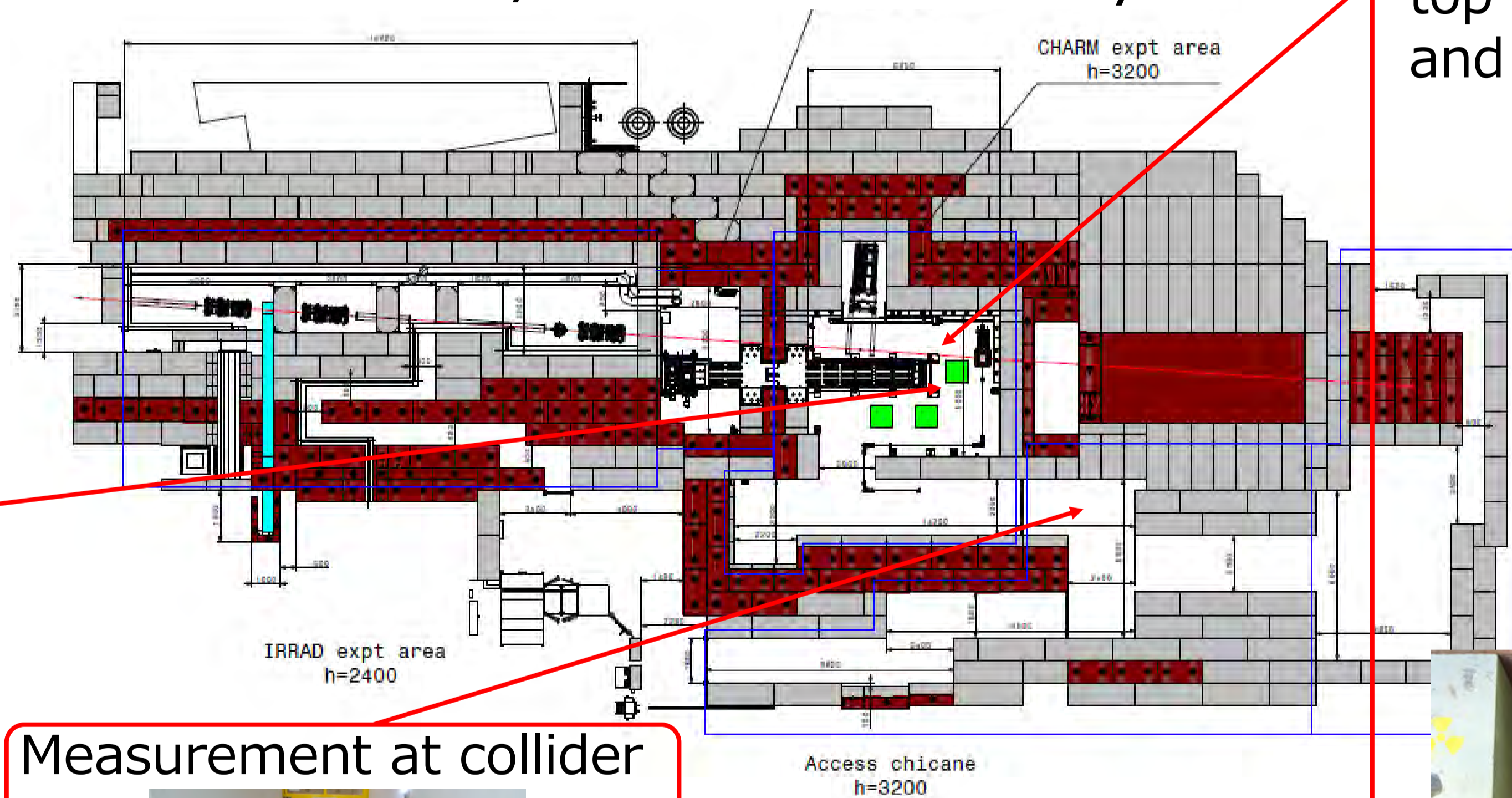
Induced activity by secondary particles directory from the target



Induced activity in air



CERN 24GeV/c irradiation facility



Measurement at collider



Measurement on top roof with hole and 40 cm iron

Bonner sphere



NE213 scintillator



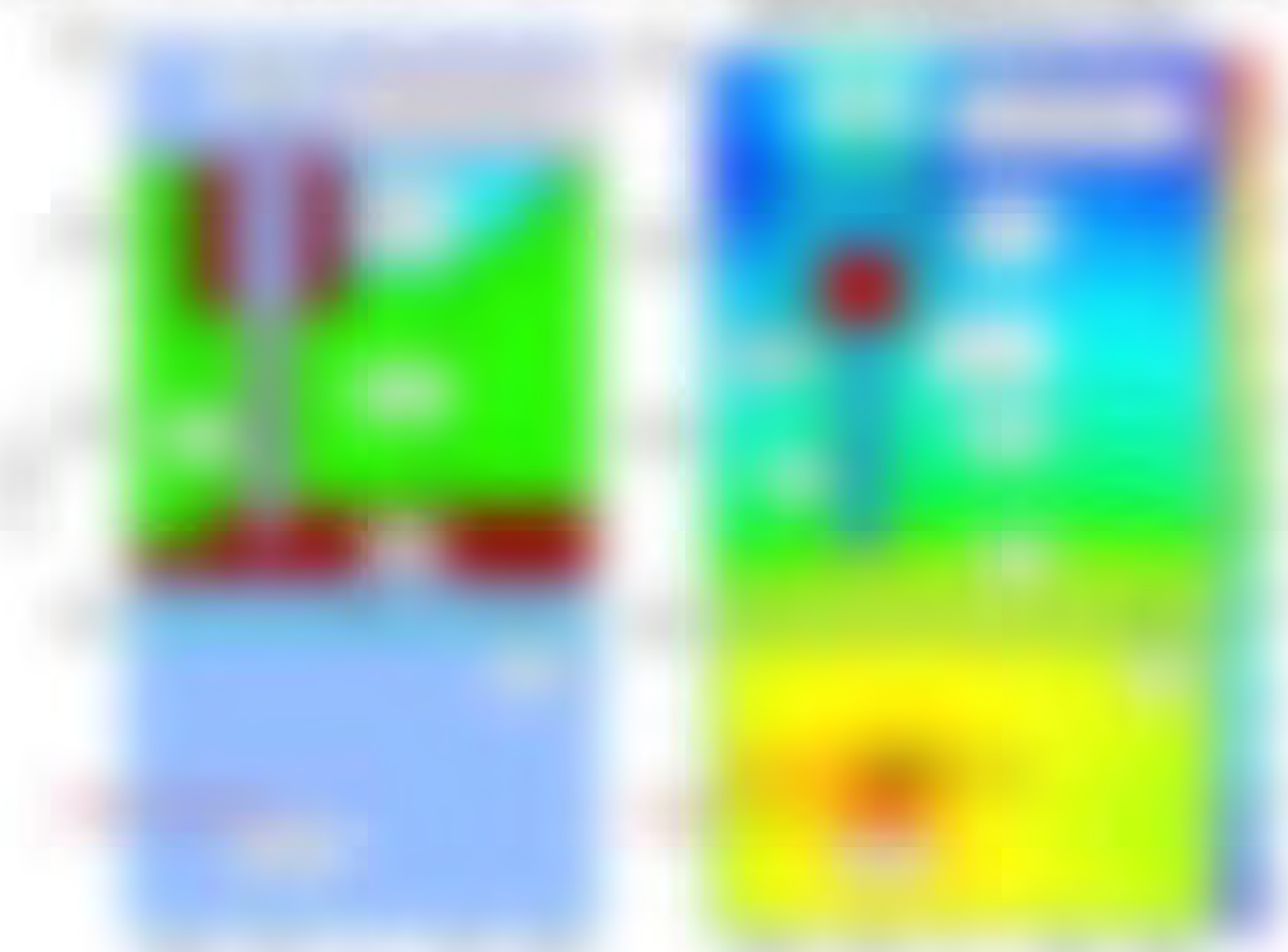
Activation



結果

Results

Theoretical calculation using Monte-Carlo codes which is used for characterization of the field



Example for lateral direction calculation

PHITS code

Comparison among results

Neutron fluence on top roof

Induced activity around the target

