Gamma – Gamma – Angular - Correlation
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The measurement of $\gamma$-angular distributions in coincidence is the standard method of determining the spin of excited nuclear levels. In this experiment the measurement of three-dimensional spectra enables a quick and very accurate determination of the angular distribution characterized by the coefficients of the Legendre polynomials from which the spin of the intermediate level can be deduced. The parity of the states can only be obtained by a separate experiment using a Compton polarimeter. In the present setup two standard NaJ(Tl) detectors (3x3” or 4x4”) are measuring in coincidence, one is fixed in position, the other can be moved to different angular positions with about 0.1° precision. A FAST multiparameter system provides the collecting of 3-dimensional spectra with an instantaneous contour plot display.
$W(\delta) = 1 + 0,1020 P_2(\cos \delta) + 0,0091 P_4(\cos \delta)$

$\gamma$-angular correlation $W(\delta)$ for a $\gamma$-cascade with $l = 4, 2, 0$ in $^{60}\text{Ni}$
Schematic diagram of $\gamma$-ray correlation polarimeter. Counter $A$ detects the "first" $\gamma$; counter $C$ detects the "second" $\gamma$ after it has been Compton scattered by $B$. [From F. Metzger and M. Deutsch, Phys. Rev., 78, 551 (1950).]
Gamma – Gamma – Angular - Correlation : Required Knowledge

- Γam
- Tun
- Comp
- Gei
- Comp
- Int
- Bet
- TRI

- Principles of
- Principles of
- What?
- What?
- Tech
- Comp
- Principles of
Gamma – Gamma – Angular - Correlation : Tasks and Goals

- Set-up
- Produce
- Set-up
- Determine
- Determine energy
- Determine the
- Measure energy
- Determine
- Compare energy

**WARNINGS**
- Be careful.
- Shut down
- Never touch
- Remove source after measurement