The experimental approach to find out the difference of the correlation of atomic fluctuation between the nearest neighbors from that between the sufficiently distant atoms has been done by means of X-ray single crystal diffra- tomectry. Fourier transform of a square of continuous PDF distribution would give a kind of Patterson function map, which has pseudo-periodicity in the Patterson space. The peaks near the origin in that Patterson map should be sharp caused by little influence of thermal motion or positional disorder. Whereas, those in the distant region from the origin should correspond to the ordinary Patterson peaks, which are averaged in the unit cell. They are considered to be the products of two atoms vibrating independently.

8-8 AgI is well known as the crystal which has the characteristic diffuse streaks caused by the extreme thermal motion of atoms. The diffuse intensity mostly appears in the plane parallel to (1010)* and in the rods parallel to c* axis. This wurtzite type compound should be the convenient specimen for executing the experiment for the above purpose.

Integrated intensities around the points corresponding to one fifth of the basic reciprocal cell vectors were measured on a four-circle diffractometer using monochromatized Mo Kα radiation. The effect of thermal motion on atomic correlations according to distance will be discussed based on the Patterson synthesis of the observed intensity distribution.

8-2-10 CRYSTAL STRUCTURE DETERMINATION OF $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ BY POWDER DIFFRACTION METHOD. By Hong Bingzhen, Zhao Zicong, Liang Jingkui. Fujian Institute of Research on the Structure of Matter Academy Sinica, China.

The pseudo-binary system $\text{BaB}_2\text{O}_4-\text{CaB}_2\text{O}_4$ has been studied by means of thermal analysis and X-ray diffraction. A compound $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ has been formed in the system, which melts congruently at 1173°C. There exist autocratic horizontal from $\text{BaB}_2\text{O}_4$ to $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ at 1073°C and from $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ to $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ at 1063°C. Both integral intensity and diffuse intensities of powder pattern of $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ have been collected by Guinier-de Wolff camera and D/Max-A diffractometer respectively. The density measured is $3.64 \text{g/cm}^3$. The IR absorption spectra show that there may be the $(\text{B}_2\text{O}_3)_2^{2-}$ rings of boxel type in $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$. A powder SHG test has been carried out, but no SHG effect has been observed. The indexing of the X-ray powder pattern indicates that $\text{CaB}_2\text{O}_4 (\text{B}_2\text{O}_3)_2$ belongs to the trigonal system with the unit cell dimensions: $a=7.157, c=35.289 \text{Å}$ in hexagonal lattice. There are 6 formula units in one hexagonal unit cell. $A=8.52 \text{g/cm}^3$. Only the reflections of type $\sqrt{4h+k+2n}$ are observed while the reflections $\sqrt{4h+k+2n}$ are absent. This limits the possible space groups to $\text{R}$ and $\text{R}$3. From the fact that no SHG effect can be observed, the space group is assumed to be $\text{R}$. A further structure refinement has been conducted by the comparison between the calculated intensities $I_c$ and the observed intensities $I_o$ ($I_o=\sum (1+\mu F^2) \exp (2\pi i hK)$, where $\mu$ is the multiplicity factor. At the Lorentz polarization factor, the atomic scattering factor in $F$ is calculated by relativistic Hartree-Fock wave function D.B. Cramer, J. T. Waber, "Inter- nationals" Table for X-ray Crystallography, "Vol. IV, 99-71, 194 (Birmingham, Khymsch, 1974) refined by anomalous scattering, $B_o$, the average temperature factor, and $k$, the proportional constant. By using $\sigma = 2.8$, we obtain the refinement result $A=211-1/2$ with 75 possible reflections of $I_o>0.25$ (the strongest one is 100). The final atomic parameters.