A method to extract this information consists of calculating synthetic optical bursts for several assumed distributions of the absorbing matter, and comparing these with the observed optical and X-ray data. In order to calculate a theoretical optical burst, a network of small surface elements is defined on the surface of the reprocessing body. Each element reflects part of the infalling X-rays and absorbs the rest. The resulting temperature of the surface element depends on the X-ray luminosity, the distance of the surface element to the X-ray source and the angle under which the X-rays reach the element. The fraction of the absorbed X-ray energy which reappears as optical photons depends on the temperature T of the surface element and on the wavelength of the photons. For high values of T most of the radiation is reemitted in the ultraviolet part of the spectrum, which cannot be observed with ground-based instruments.

By arranging the contributions of all surface elements according to their delayed arrival times we can reconstruct the profile of an optical burst as it is expected for an infinitely sharp X-ray burst. Since a real X-ray burst has a finite duration, the shape of the optical burst will be a convolution of this calculated optical response profile with the profile of the X-ray burst.

Within the framework of a low-mass X-ray binary model, obvious locations for the production of an optical burst are the surface of the companion star and an accretion disk. The latter is formed around the neutron star, because the matter which leaves the companion cannot reach the neutron star directly. Due to the rotation of the binary system, this gas flows in almost circular orbits around the neutron star. Because of mutual friction, the gas slowly spirals inward, creating a disk-shaped configuration.

The radius of the companion star is much smaller than its distance to the neutron star. Therefore the differences in the pathlength of absorbed X-rays and subsequently emitted optical photons are relatively small. Thus one expects that for optical bursts originating at the companion star, the smearing will be small compared to the average delay. For a disk, on the other hand, one expects that the smearing and delay are approximately equal. This gives us a possibility to decide where in the binary system the optical burst originates.

Tentative Time-table of Council Sessions and Committee Meetings in 1981

May 4	Committee of Council
May 7 – 8	Finance Committee
May 7	Scientific Technical Committee
May 8	Users Committee
May 21 – 22	Observing Programmes Committee
June 4	Council, Stockholm
November 10	Scientific Technical Committee
November 11 – 12	Finance Committee
November 13	Committee of Council
Nov. 30 – Dec. 1 – 2	Observing Programmes Committee
December 3 – 4	Council

All meetings will take place at ESO in Garching, unless stated otherwise.

Detailed calculations by London, McCray and Auer (JFLA, Boulder) have shown that the optical reemission can be closely approximated by a Planckian radiation curve. For a fixed wavelength the brightness then only depends on the temperature of the radiating body. This temperature, in turn, depends on the intensity of the infalling X-rays. In this way a relation can be derived between the brightness of the X-ray source and the optical brightness of a surface element. If we wish to apply such a relation in a comparison of the observed optical and X-ray bursts, we have to realize that the temperature in the Planck function is an average over the different parts of the absorbing region.

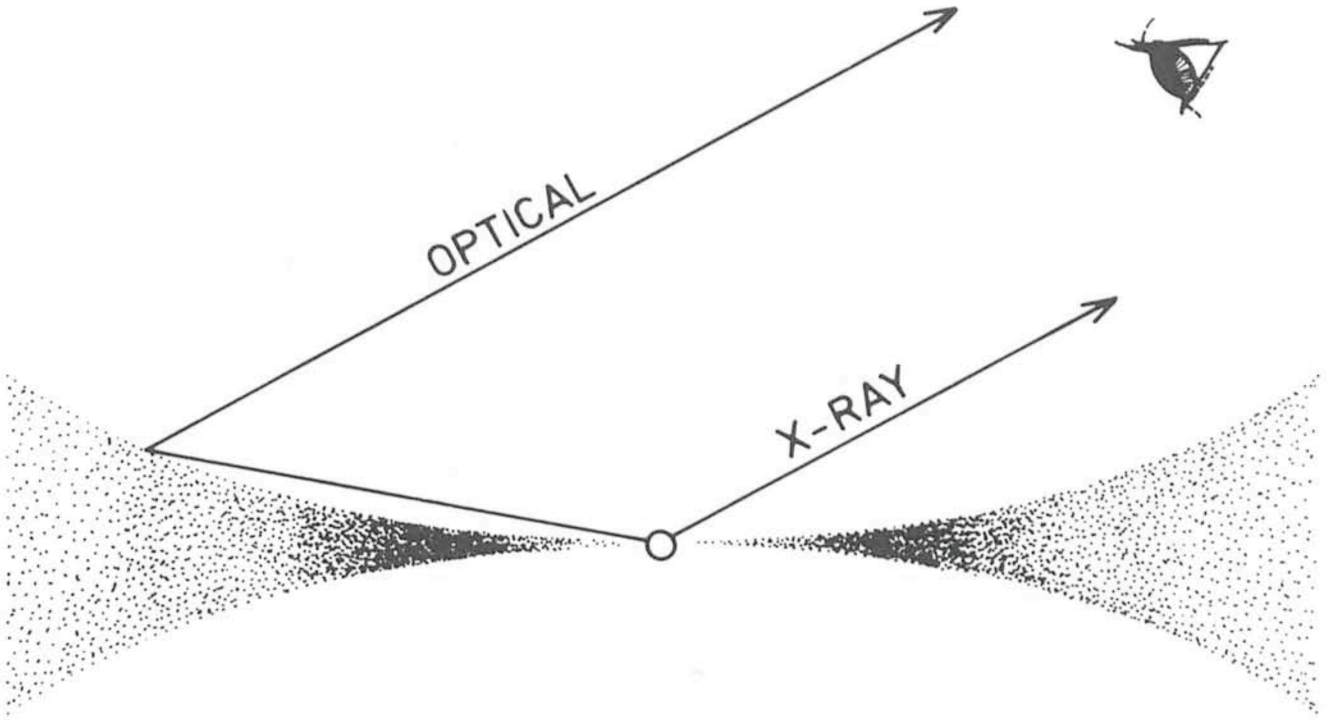

Fig. 2: *Schematic representation of the optical burst as originating from reprocessing of X-rays in an accretion disk surrounding the X-ray source.*