

The background of the entire page is an abstract, textured composition. It features large, overlapping geometric shapes in shades of yellow, orange, and purple. These shapes are defined by dark, almost black, outlines, creating a sense of depth and movement. The overall effect is reminiscent of a stylized, low-poly landscape or a complex, organic structure.

Dolby Film Sound

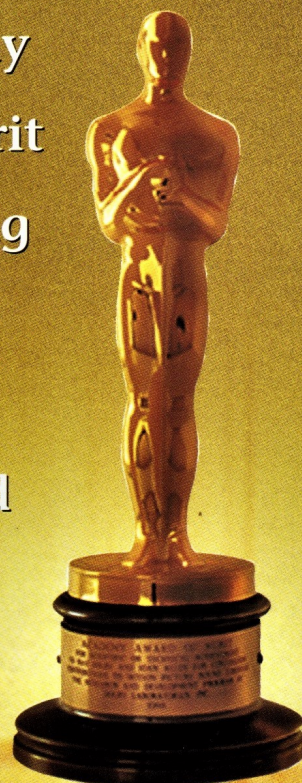
The Complete Service



Enter the world of Dolby Film Sound

Throughout Dolby's history, the company has focused on a single mission: to develop technologies that improve sound recording and reproduction. When Dolby entered the motion picture business in the early 1970s, a new era in sound technology was born. Since then, Dolby film sound formats have evolved to provide the finest possible motion picture experience. But the real success of the formats lies in the beginning-to-end service to the industry provided by Dolby Film Sound Consultants who give technical support and help to filmmakers, mixing studios, laboratories, distributors, and cinemas.

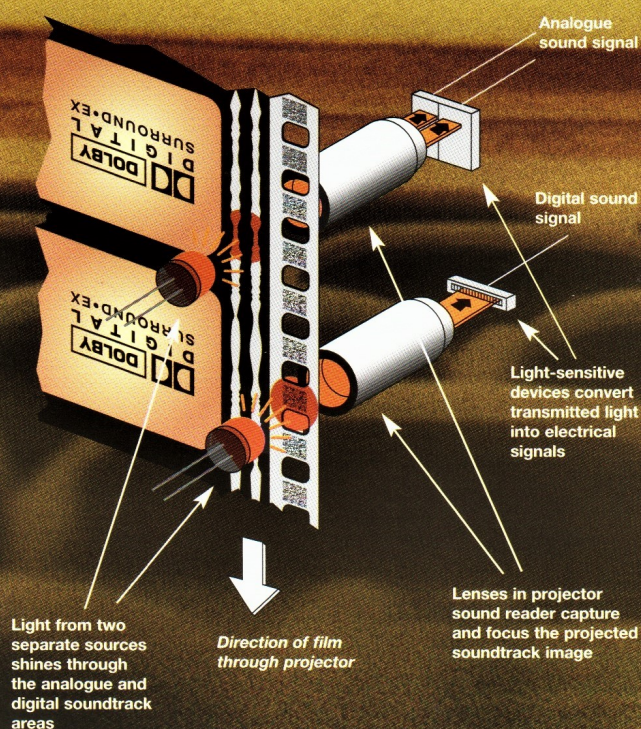
1989 Academy
Award of Merit
for continuing
contribution
to motion
picture sound



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What is a Dolby soundtrack?

All Dolby film sound formats are backwards-compatible, enabling cinemas to play films to the standard to which they are equipped. Both the analogue and digital soundtracks are on the same piece of film, providing the most cost-effective and practical way of making superb audio available to every cinema. The tens of thousands of cinemas worldwide equipped for Dolby Digital playback can deliver this superb digital sound to their audiences without needing extra disks or different inventories.

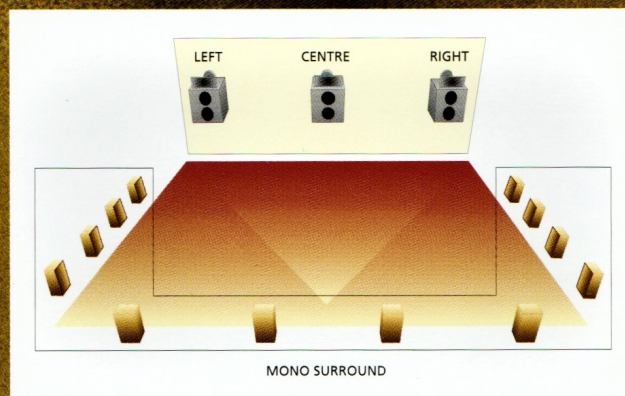


Sound reader (in the projector)

Dolby SR

In 1986, Dolby Laboratories introduced a new professional recording process called Dolby SR (Spectral Recording). This was used on the analogue soundtrack on 35 mm film to provide more than twice the noise reduction, plus a wider frequency response and lower distortion than its predecessor, Dolby A-type. As with Dolby A-type, Dolby SR is a mirror-image encode/decode process where the encoding takes place in the mixing studio and the decoding in the cinema.

A Dolby SR soundtrack features four channels with left, centre, and right speakers behind the screen, and a single surround channel used for ambiances, atmospheres, and special effects. Because there isn't enough room for all four channels to be printed separately, Dolby matrix technology adds these four channels together to be printed on the 35 mm film as two channels, known as Left total (Lt) and Right total (Rt). The cinema decoding equipment



Dolby SR channel layout

(*Dolby Cinema Processor*) then re-creates these original four channels, using advanced matrix decoding technology, and feeds the sounds to the appropriate loudspeakers.

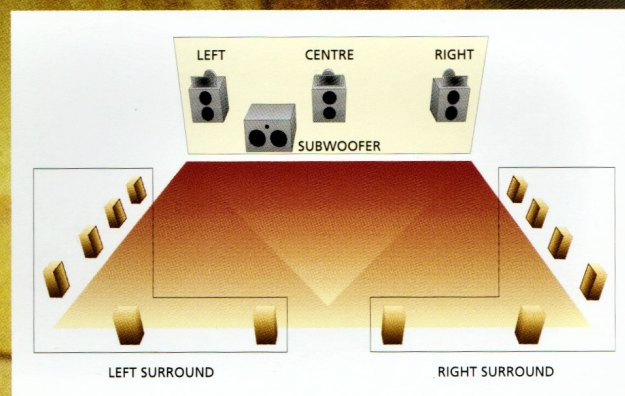
Dolby Digital

Introduced in 1992, this system uses Dolby's powerful audio coding technology to fit 5.1 channels of high-quality digital sound into the space between the sprocket holes on 35 mm film, enabling the digital soundtrack to co-exist with the analogue soundtrack.

The improvements over analogue sound offered by Dolby Digital apply not just to loud dramatic effects (like crashes, explosions, and aircraft passing overhead) but in much subtler ways such as:

- clearer positioning of sounds at all times
- cleaner dialogue
- more lifelike atmospheres and quiet effects
- more accurate musical reproduction.

Dolby Digital delivers five full-range channels (Left, Centre, Right, Left Surround, and Right Surround), and also provides a separate Low-Frequency Effects (LFE) channel for reproduction through a subwoofer. Because of



Dolby Digital channel layout

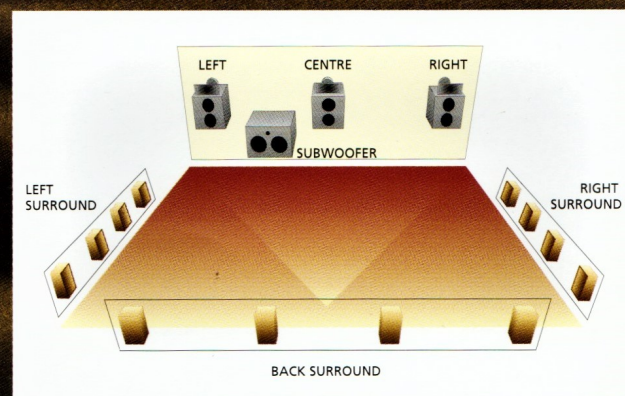
the limited frequency range of this channel, it is referred to as ".1" when describing the Dolby Digital 5.1-channel format.

Dolby Digital Surround EX

Co-developed and co-owned by Dolby Laboratories and Lucasfilm THX, the Dolby Digital Surround EX format was developed in 1998 to provide sound mixers with greater flexibility in creating film soundtracks.

The format is an enhancement of the Dolby Digital format and adds a third surround channel to improve the positioning of the surround effects (such as front-to-back panning of sounds) and allows the ambient sound reproduction to be more uniform throughout the cinema.

The format still uses the same digital data blocks between the sprocket holes and remains fully compatible with the Dolby Digital 5.1-channel system. The optical transfer and laboratory printing process remain identical, so using this format incurs no extra costs. Cinemas installed with Dolby Digital Surround EX decoding equipment are able to re-create the three surround channels, thus



Surround EX channel layout

adding the extra realism and excitement this format offers to an audience.

PRODUCTION

Pre-production meetings

Producing a film with a high-quality, multichannel Dolby soundtrack should be planned from start to finish. Our international team of Sound Consultants can discuss any stage of the production process, from location and music recording, through studio postproduction and film printing, to cinema exhibition. Our Consultants can be reached by phone or email and are happy to answer any queries.

Arranging the contract

A production company wishing to make a film with a Dolby soundtrack must first enter into a straightforward standard *Motion Picture Service & Worldwide Trademark & Standardization Agreement* with Dolby Laboratories. To start the process, the following details should be faxed to the Wootton Bassett office (44 1793-842111):

- production company contact details
- film details (title, running length, format, etc.)
- mixing studio to be used
- expected date of the mix.

As soon as we receive the signed agreement and fee, the authorisation to use Dolby equipment is sent to the appropriate studio for this specific production.

Our *Motion Picture Service & Worldwide Trademark & Standardization Agreement* details

- services provided by Dolby Laboratories (for which a fee is payable before the start of the mix) and clarification of responsibilities
- correct usage of the Dolby trademarks and logos (for which no fee is due)
- technical specifications for the soundtrack.

Selecting a mixing studio

Dolby Laboratories maintains a current list of all studios worldwide approved to produce Dolby film soundtracks. These studios have met the high specifications of acoustics and equipment, calibration and alignment required to produce a Dolby soundtrack. They provide an environment in which a director can produce a soundtrack that will play back around the world as faithfully as local cinema conditions allow.

Dolby equipment has been installed in the approved studios to provide the encoding and decoding needed for the creation of a Dolby film soundtrack. *Use of this equipment by the studio is permitted only after a film production company has completed the Service Agreement, as detailed in "Arranging the Contract" above.*

The studios should be contacted directly for their rates and availability.

Mastering a soundtrack

Dolby Sound Consultants should always be present at the studio for the final stage of a mix, when the printing master is generated. This is normally a mixdown from individual dialogue, music, and effects premixes and, if necessary, small technical and artistic changes can be made at this time. For a Dolby Digital or Dolby Digital Surround EX mix, the Dolby encoding equipment in the studio produces a Magneto Optical (MO) disk containing both the six-track digital mix and the two-track analogue mix.

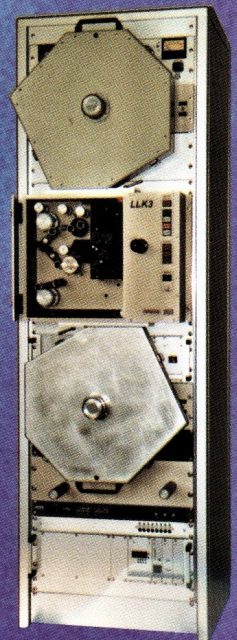
Dolby Sound Consultants check the alignment of the mixing studio's acoustics and equipment before the printing master is made, and can offer technical and creative advice for the best use of the Dolby film formats. This process also allows our Consultants to become familiar with the mix, which is invaluable if tests and checks are necessary later in the process.



Film mixing studio

Optical transfer

A current list of approved optical transfer facilities is available from Dolby Laboratories. We provide information and training to these facilities in order to maintain Dolby requirements and procedures. Camera operators must coordinate with the printing laboratory to establish correct density matching before the film soundtrack is transferred. Once this has been established, the transfer itself should be relatively straightforward and a Dolby Sound Consultant is not normally required to be present. For a Dolby Digital film, the optical transfer is made from the Dolby MO disk produced in the mixing studio.



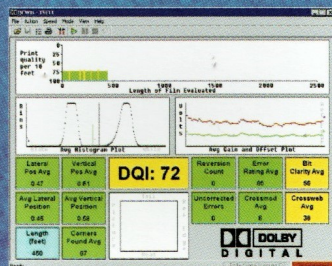
Optical sound camera

DISTRIBUTION

Controlling the soundtrack quality at the printing laboratory

Laboratories printing Dolby Digital soundtracks must have the Dolby Quality Control (QC) system installed. This software analyses many of the printing parameters of the digital data blocks between the sprocket holes on an entire reel of film and provides a report on its findings. The laboratory can use this tool to identify any problems and quickly correct them, plus, a print-out of the QC report sheet can always be available for the customer on request. QC systems should be maintained and checked by Dolby Consultants to ensure their accuracy; we are always pleased to assist with technical printing questions or problems.

QC software



Film trailers

The *Motion Picture Service & Worldwide Trademark & Standardization Agreement* signed by the film's production company also covers a film trailer soundtrack mix, which must be in the same sound format as the feature film itself. There is a fixed fee for Dolby Digital trailers that covers the necessary transfer costs. The Film Department at Dolby Laboratories in Wootton Bassett should be contacted for further information about the transfer procedures. If a Consultant is required to attend the mixing studio, this is charged as quoted in the Service Agreement.

Foreign language versions

Every film originally produced with a Dolby soundtrack can be remixed into any foreign language. The local Dolby Consultant provides the same technical services with the same level of care and attention, and seeks to ensure that the foreign versions are an exact match of the original soundtrack. Our comprehensive network of Sound Consultants, covering almost all corners of the globe, is detailed on the back page.

A separate *Motion Picture Service Agreement* must be completed for each additional foreign language version produced with a Dolby soundtrack. The fee for additional languages is lower than for the original version.

ADDITIONAL SERVICE

Print Checking Service

With so much investment made by film exhibitors to ensure their audiences enjoy excellent digital sound and a bright, clean picture, it's only natural that the distributors also want to supply high-quality prints to each and every cinema.

Our *Print Checking Service* is designed for film distributors to ensure that bulk prints from the laboratories are all of the highest quality. This is performed by technicians with experience of quality presentation in both film production and exhibition. Print checking may be done either at the Wootton Bassett screening room or at the printing laboratory's own screening room. After check prints have been approved, random samples are taken from the bulk prints, and both image and all soundtrack formats tested and analysed for flaws or complications. Problems with the bulk printing can quickly be detected and rectified by the laboratory before prints leave for the cinema.



The Sound of

EXHIBITION

Training programme for approved installers

To achieve Dolby's target of establishing a worldwide set of replay standards for film sound, it is vital that every cinema is aligned to the same high specifications. All our sound decoding equipment (*Dolby Cinema Processor*) is sold to cinemas through approved installers. Each year, Dolby invites these installers to attend training courses covering all aspects of the installation of cinema sound systems, from the Dolby processor itself to room acoustics.

At the cinema

After support from Dolby through the postproduction, printing, and distribution phases of producing a new film, the final stage is to ensure that the audience fully appreciates the filmmaker's vision and receives the best possible presentation of the film in the cinema.

Dolby Consultants are normally involved in important screenings such as premieres and press screenings, to verify and optimise replay conditions, assist with the rehearsal of the screening, and provide backup support during the screening itself.



Consultant aligning cinema

Assistance at festivals

Dolby Laboratories has long provided technical assistance at film festivals around the world. Such screenings are very important to many first-time filmmakers and seasoned professionals alike. Our Sound Consultants are there to provide technical support, ensuring the films are presented under the best possible conditions.

Cinema advertising

Dolby is the one company that can provide cinema commercials in digital sound, enabling advertisers to reach their audience in the finest cinema conditions. The technology within the cinema processor automatically switches to the correct format when a Dolby Digital commercial is playing, thus ensuring that the audience benefits from the same superb sound quality and can enjoy an entire film presentation in Dolby Digital.

As with feature films, all cinema commercials must be contracted with Dolby Laboratories. At many studios, this can be arranged directly, through a simplified and quick procedure. Again, we can provide an up-to-date list of studios approved for mixing Dolby cinema commercials.

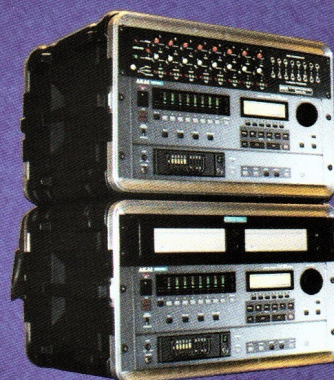
For several years, Dolby Laboratories has been researching the subject of excessive loudness, especially in film commercials and trailers. With Dolby's guidance, industry bodies and cinema commercial sales houses have now implemented regulations to ensure the audience does not suffer from uncomfortably high-volume sound. For current information on worldwide standards, please contact the Film Department at Dolby Laboratories in Wootton Bassett.

ADDITIONAL SERVICE

Dolby Digital Double-Head Screening Service

With most mixing studios currently working with digital dubbers, we now offer a service for playing back mixes in any cinema directly from digital dubbers.

This service is ideal for special presentations of mixes-in-progress for clients, festival screenings, and audience-reaction screenings, and is run by Dolby Consultants who also verify the alignment of the cinema and the equipment before the film screening is rehearsed. The use of digital dubbers for these screenings eliminates the need for expensive transfers to magnetic tape and the rental of large, bulky magnetic playback units, while providing higher-quality audio in any chosen cinema.



Digital dubbers

Great Picture

FILM SOUND GLOSSARY

4:2:4 Matrix

A Dolby technology that enables a four-channel L, C, R, S mix to be matrix-encoded to two channels to be transmitted either by film, broadcast, video, etc. The original four channels are re-created after matrix decoding.

5.1 Mix

A six-channel Dolby Digital discrete mix. The ".1" is used for the sixth channel, as the LFE channel has a limited bandwidth up to 125 Hz.

Cross-Modulation Test

A test signal recorded on optical film to ensure the correct density match between a sound negative and a print, thus producing a correct reproduction of a studio print master.

Cyan Dye Track

A new development in optical sound printing that eliminates the need for the problematic silver redeveloping process. To be played correctly, the soundtrack requires a red LED soundhead on the projector.

Discrete Mix

A term used for the Dolby Digital mix that uses six (often called 5.1) discrete audio channels.

Dolby AC-3

The multichannel coding technology used on Dolby Digital film soundtracks, DVD, and broadcast applications.

Dolby Digital

A high-quality, six-channel (often called 5.1) audio system using Dolby AC-3 coding technology. With a high degree of transparency and data rates as low as 320 kbps, Dolby Digital is used for applications including 35 mm film soundtracks, DVD, and broadcast.

Dolby Digital Surround EX

The technology co-developed and co-owned by Dolby Laboratories and Lucasfilm THX that adds a third surround channel in the cinema while retaining compatibility with regular Dolby Digital channel systems.

Dolby Noise Reduction

The signal processing system that reduces the inherent noise in recording media without affecting the sound. Dolby A-type and, subsequently, Dolby SR were originally used on commercial music recordings and later on film soundtracks. Dolby B-type, C-type, and S-type were designed for the consumer audio cassette.

Dolby SR (Spectral Recording)

The most powerful analogue Dolby recording system, currently still used on film soundtracks, offers greater noise reduction and a wider frequency range than Dolby A-type.

Domestic Version

The original language soundtrack of a film, often used in comparison tests with a foreign language version of the same film.

Double Head/Sep Mag

The practice of running a separate reel of magnetic film containing the soundtrack in sync with the optical film containing the picture. Often used for special screenings before a married (combined) print is produced.

Dubbing Studio

See Mixing Studio.

DVD (Digital Versatile Disc)

A domestic release medium widely used for feature films. Dolby Digital is the standard audio format used with options for each disc to contain multiple language versions.

Effects

Sound effects, i.e., the non-musical elements on a soundtrack other than dialogue.

Film Platter/Tower

Equipment used in the cinema to join separate reels of film together for continuous play through a projector.

Final Mastering

The mixing stage at which all the separate elements and premixes are mixed together to produce the printing master recording that is sent to the optical transfer stage.

Foley

Sound effects, such as footsteps, rustling clothes, traffic noise, etc., recorded by specialists during the postproduction sound-dubbing process. (Named after one of the first such specialists.)

Hi 8

An eight-track DAT master, as used by the Tascam DA-88 and Sony PCM-800 machines. For film mastering, the track layout is often L, C, R, Ls, Rs, SW, Lt, Rt.

High Magenta Track

A method of printing optical sound that enables correct playback on both white light readers and red LED readers on projectors. The track is still redeveloped, but uses a different colour balance to accommodate both light source wavelengths.

LEQ (Loudness Equivalent) Measurement

A method of measuring the perceived loudness of a section of audio material. The Dolby Model 737 LEQ meter uses time averaging

and frequency weighting to produce an LEQ(m) measurement of film sound.

LFE (Low-Frequency Effects)

The channel used for sounds such as explosions that are fed into the subwoofer loudspeaker. Often referred to as a ".1" channel, hence Dolby Digital 5.1.

Lt, Rt (Left total, Right total)

A four-channel L, C, R, S mix, matrix-encoded to two channels to be transmitted either by film, broadcast, video, etc. The original four channels are re-created after matrix decoding.

M & E (Music & Effects)

An original film soundtrack that has had all dialogue removed before being distributed to foreign language studios for a new language dub to be added.

Married Print

A film print that contains both the picture and the sound, i.e., the sound negative is "married" to the picture negative onto the same piece of print film.

Mixing Studio

A special theatre equipped for mixing film soundtracks. These rooms contain the necessary Dolby encoding and decoding equipment and are calibrated and aligned to meet Dolby specifications and standards.

MO (Magneto Optical) Disk

A computer disk used in Dolby Digital mastering equipment to record both the six-track mix and the Lt, Rt mix. The whole soundtrack is therefore mastered onto this one disk which is then sent to the optical transfer stage for the sound negative to be produced.

Optical Sound Camera

Equipment used to transfer the printing master from the mixing studio (normally a Dolby MO disk) to an optical sound negative. The sound camera exposes the raw sound negative stock using a combination of light from LEDs, valves, and/or laser.

Overlaps

A short section of sound from the beginning of a reel added to the end of the previous reel. Due to the offset between picture and sound on the print, this must be done to ensure there are no gaps in the sound when the reels are joined together.

Premix

A mix (usually six or eight tracks) containing only one of the three elements of a soundtrack (dialogue, music, or effects). May be used to produce stems (see below) or the final printing master.

Printing Master

The master tape of the final mix produced in the mixing studio and

sent to the optical sound camera. For Dolby Digital, this takes the form of an MO disk.

Pro Logic

4:2:4 matrix technology, when applied to domestic formats such as video, broadcast, and DVD.

Pullups

see Overlaps.

QC (Quality Control) System

A software-based system used in film laboratories to analyse the print quality of Dolby Digital data blocks and provide a summary of all parameters.

Release Print

The actual film played in the cinema. A release print consists of reels approximately 20 minutes long which are played consecutively without interruption, either by alternating between two projectors, or by splicing the individual reels together into one large reel mounted on a film platter.

SPL (Sound Pressure Level)

A measure of the loudness of sound at a particular point in an auditorium. All cinemas and mixing studios are aligned to the same SPL to ensure the audience hears the film soundtrack at the level the director intended.

Stems

Final stage premixes, fully balanced and positioned, which still contain the individual elements (music, dialogue, and effects) separately. Stems are combined to produce the final printing master and other delivery requirements.

Stereo Variable Area (SVA)

A matrixed stereo optical soundtrack used in the Dolby analogue formats. The variable area for each matrixed track is used to change the amount of light passing through the film to the sound head on the projector. Two independent variable tracks are used for the Lt and Rt signals, which are then decoded to become Left, Centre, Right, and Surround channels.

Subwoofer (SW)

The loudspeaker used to reproduce the signal from the low-frequency effects (LFE) channel.

THX

A technical specification for the entire playback environment, picture and sound, regardless of film format.

X-Curve

A standard replay characteristic that makes it possible for cinemas of different sizes to sound similar by compensating for the different reverberation characteristics.

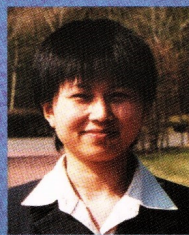
DOLBY'S INTERNATIONAL FILM SOUND CONSULTANTS



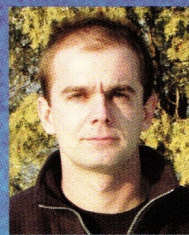
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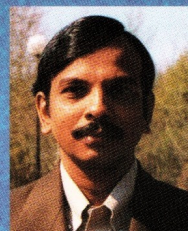
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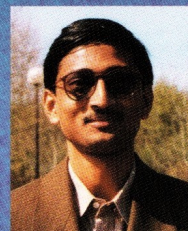
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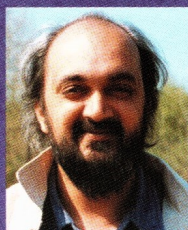
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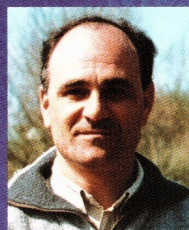
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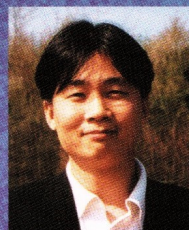
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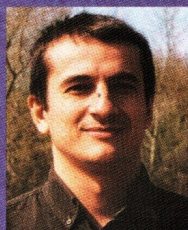
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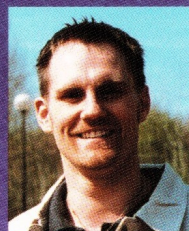
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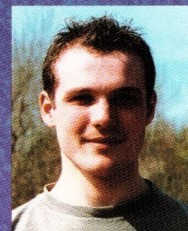
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