# 信导作业topic7

Last class,Mr Hei gave us a very interesting guide to our major.

I have learned Equalization (communications)

In [telecommunication](https://en.wikipedia.org/wiki/Telecommunication), **equalization** is the reversal of distortion incurred by a signal transmitted through a [channel](https://en.wikipedia.org/wiki/Channel_(communications)). **Equalizers** are used to render the [frequency response](https://en.wikipedia.org/wiki/Frequency_response)—for instance of a telephone line—*flat* from end-to-end. When a [channel](https://en.wikipedia.org/wiki/Communication_channel) has been equalized the [frequency domain](https://en.wikipedia.org/wiki/Frequency_domain) attributes of the signal at the input are faithfully reproduced at the output. Telephones, [DSL](https://en.wikipedia.org/wiki/DSL) lines and television cables use equalizers to prepare data signals for transmission.

Equalizers are critical to the successful operation of electronic systems such as [analog broadcast television](https://en.wikipedia.org/wiki/Analog_television). In this application the actual [waveform](https://en.wikipedia.org/wiki/Waveform) of the transmitted signal must be preserved, not just its frequency content. Equalizing filters must cancel out any [group delay and phase delay](https://en.wikipedia.org/wiki/Group_delay_and_phase_delay) between different frequency components.

**Audio lines**

Early telephone systems used equalization to correct for the reduced level of high frequencies in long cables, typically using [Zobel networks](https://en.wikipedia.org/wiki/Zobel_network). These kinds of equalizers can also be used to produce a circuit with a wider bandwidth than the standard telephone band of 300 Hz to 3.4 kHz. This was particularly useful for broadcasters who needed "music" quality, not "telephone" quality on landlines carrying program material. It is necessary to remove or cancel any [loading coils](https://en.wikipedia.org/wiki/Loading_coil) in the line before equalization can be successful. Equalization was also applied to correct the response of the transducers, for example, a particular [microphone](https://en.wikipedia.org/wiki/Microphone) might be more sensitive to low [frequency](https://en.wikipedia.org/wiki/Frequency) sounds than to high frequency sounds, so an equalizer would be used to increase the volume of the higher frequencies (*boost*), and reduce the volume of the low frequency sounds (*cut*).

**Television lines**

A similar approach to audio was taken with television landlines with two important additional complications. The first of these is that the television signal is a wide bandwidth covering many more octaves than an audio signal. A television equalizer consequently typically requires more filter sections than an audio equalizer. To keep this manageable, television equalizer sections were often combined into a single network using [ladder topology](https://en.wikipedia.org/wiki/Ladder_topology) to form a [Cauer equalizer](https://en.wikipedia.org/wiki/Cauer_equaliser).

The second issue is that phase equalization is essential for an analog television signal. Without it [dispersion](https://en.wikipedia.org/wiki/Material_dispersion) causes the loss of integrity of the original waveshape and is seen as smearing of what were originally sharp edges in the picture.

I think it is very important to our life.

I want to learn more about this.

About Motivation: Equalization,I already learned a little,but also have some questions.I will continue to learn about Motivation: Equalization.I am very interested about it.

Wish Mr Hei to teach us more about our major.

By the learning,I have a confident heart to my major and future.Mr Hei,thank you very much.

电信1806 吴叶赛