

# MAGNETIC HILLS AND OPTICAL ILLUSION IN KURDISTAN REGION

*Parekhan M. Jaff*

Professor, Department of physics, Faculty of Science and Educational Science, School of Science, University of Sulaimania

*Kharman A. Faraj, PhD*

Department of physics, Faculty of Science and Educational Science, School of Science, University of Sulaimania

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## Abstract

“Anti-Gravity Hills”, or “Magnetic Hills”, are natural places where apparently defying the law of gravity. In some places in Kurdistan region these magnetic hills exist. This type of hills appears to go uphill is really going downhill. The purpose of the present work was to register an unknown magnetic hill, and a water channel of abnormal apparent direction of flow! And to study what types of physical properties are behind these, we investigated that optical illusion, and a false horizon line are behind.

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**Keywords:** Magnetic Hills, optical illusion Anti-Gravity Hills, Spook Hills

## Introduction

“Anti-Gravity Hills” (also known as “Spook Hills” or “Magnetic Hills”) are natural places where cars put into neutral are seen to move uphill on a slightly sloping road, apparently defying the law of gravity. Typically, the “spooky” stretch of road is rather short (50-90 m), only a few meters wide, and surrounded by a natural hill Landscape, without nearby buildings. Such places are found in several countries all around the world, and have been tourist attractions for decades. Fig. (1) shows one of these places (Paola Bressan et al., 2003).



A) The stretch of road is (miss) perceived as running uphill



(B)The stretch of road is (miss) perceived as running downhill

Fig. (1); Ariccia (Italy) Magnetic Hill

Beside the other two places studied and registered in Kurdistan region near Koya city at 2009 (Parekhan M.Al-Jaff., 2009), two natural cases are studied and registered by our team. Ant-Gravity hill, between the city of Khormal, and Beara, 75Km from Sulaimania city, and a stream of a water channel located between Sulaymania and Qiawan cities, 25Km from Sulaimania.

There are some places where the land is shaped in such a way that it can sometimes appear that things are going uphill when they are really going down. Some people attribute this type of activity to paranormal causes (Gregory, RL, 1997, Eagleman. DM 2001). An optical illusion is a type of illusion characterized by visually perceived images that are deceptive or misleading. Information gathered by the eye is interpreted by the brain to give the perception that something is present when it is not. Optical illusions stimulate us by challenging us to see things in a new way. They are interesting within scientific disciplines because they lie on the border of what we are able to see.

### **The Areas and Methods**

Two places chosen in this study, a natural hill 75Km from Sulaimania between the city of Khormal, and Beara which has coordinates: N 351508.4°, E 460351.4°.

The second place located between Sulaymania and Qiawan city 25Km from Sulaimania, at the coordinates: N 354325.01°, E 452446.1°.

It is a stream channel of more than 300m in length through which a natural stream of water of abnormal apparent direction of flow used to run to a village in the region. Cars cannot prove the direction of the slope because the stream channel is located on an inclined mountain.

Wild 1010 Total Station, spirit level and camera used for determination of the slopes in this study, beside a group of 10 persons of different ages that participated in this experiment as subject for detecting the apparent directions of road inclinations.

### **Results and Discussion**

The first studied location is a road of >450m length between the city of Khormal, and Beara. Going from Beara to Khormal, the road is seen as strongly uphill, while our car started rolling up the hill and kept on going a distance of more than 450m which is approximately 4 times the registered data in literature (Paola Bressan et al., 2003). However, the inclination of the road has been measured and seen using Wild 1010 Total Station and spirit levels; the actual slope has been found to be equal to 0.017 which is opposite to the apparent seen by our group, the results are clear in Fig.(2).

The measurements indicate that the visually perceived lowest point of the Strange Slope is “actually” higher than the visually perceived highest point on the slope. The phenomenon on the Slope may be all due to the illusion of the visual perception. This phenomenon agrees with one of the definitions of optical illusion which states that: Information gathered by the eye is interpreted by the brain to give the perception that something is present when it is not. There are physiological illusions, that occur naturally, and cognitive illusions, that can be demonstrated by specific visual tricks that show particular assumptions in the human perceptual system (Eagleman.

DM., 2001). Local topography can also produce the illusions.( Parekhan M.Al-Jaff. 2009 ).

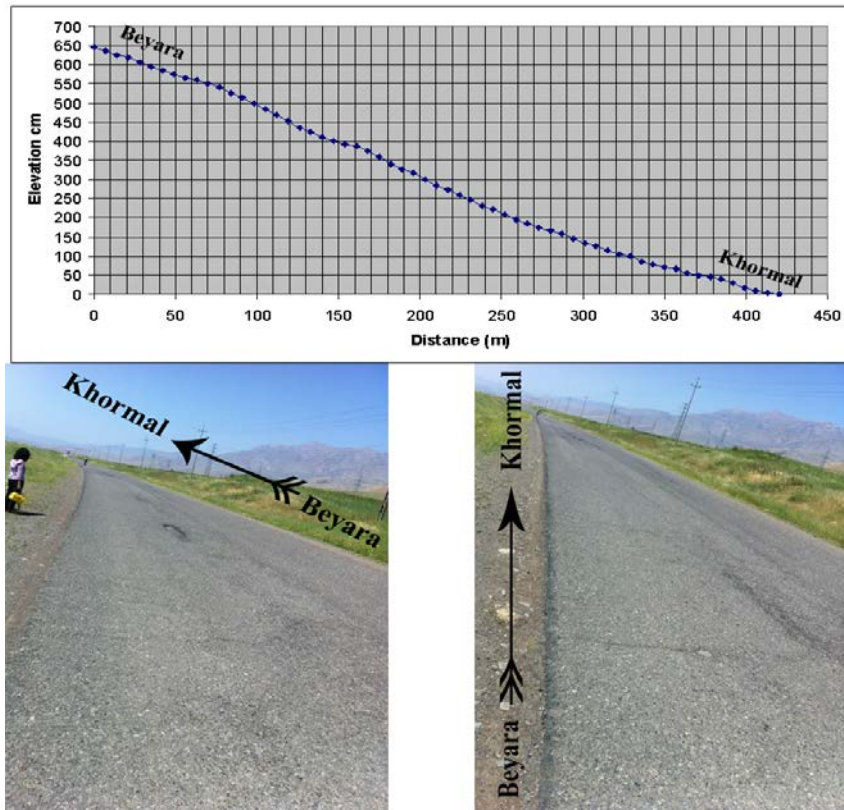


Fig.(2); Khormal station

The second place is located between Sulaimania and Qaiwan cities 25Km from Sulaimania; it is a channel through which a natural stream of water used to run to a village in the region. What is left is a dry stream channel of more than 300m in length. Cars cannot prove the direction of the slope because the stream channel is located on an inclined mountain. A group of 10 persons of different ages participated in this experiment as subject.

Observers sat in front of the channel on the principle street down the hill. They were asked to look at the Stream channel, describe what they saw, and then assess the slope of the road. The apparent slope has always been found to be opposite to the actual one.

The second part of the experiment done by dividing the road into three stations, Figs.(3, 4, and 5) show the slopes and the respective photos of the stations respectively.

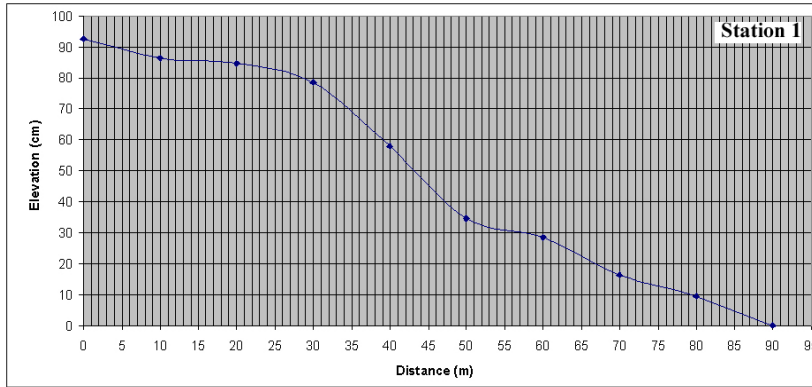


Fig. (3A); The relation between the distance and elevation in first station in Qaiwan

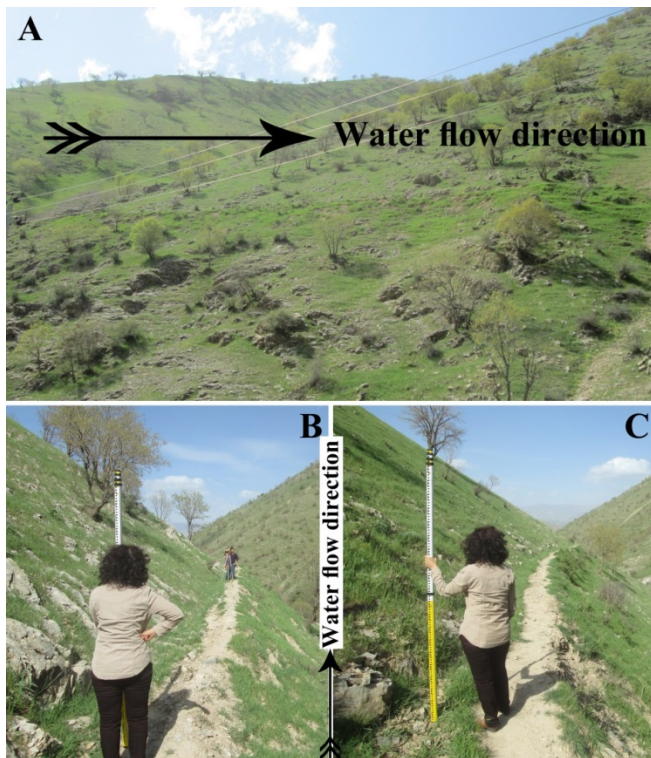


Fig.(3B); First station



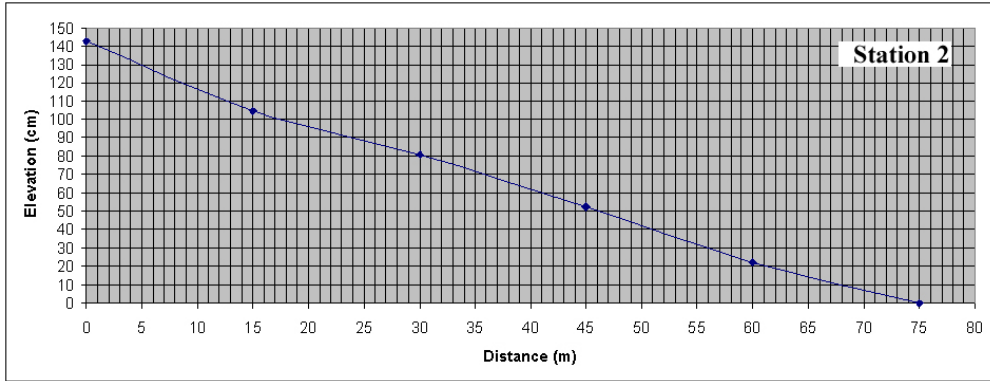


Fig.(4A); The relation between the distance and elevation in second station in Qaiwan

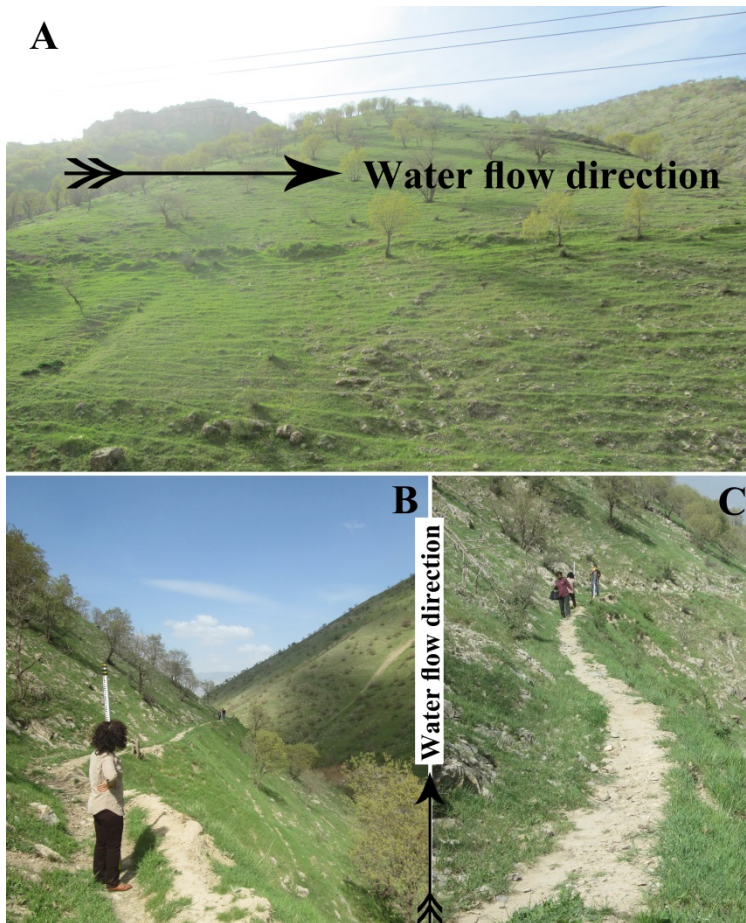
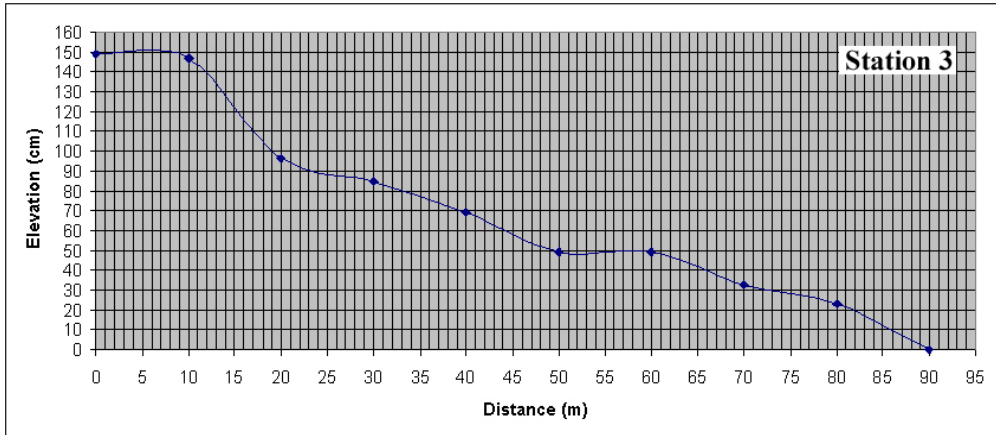


Fig.(4B); Second station in Qaiwan



(Fig.5A); The relation between the distance and elevation in the third station in Qaiwan

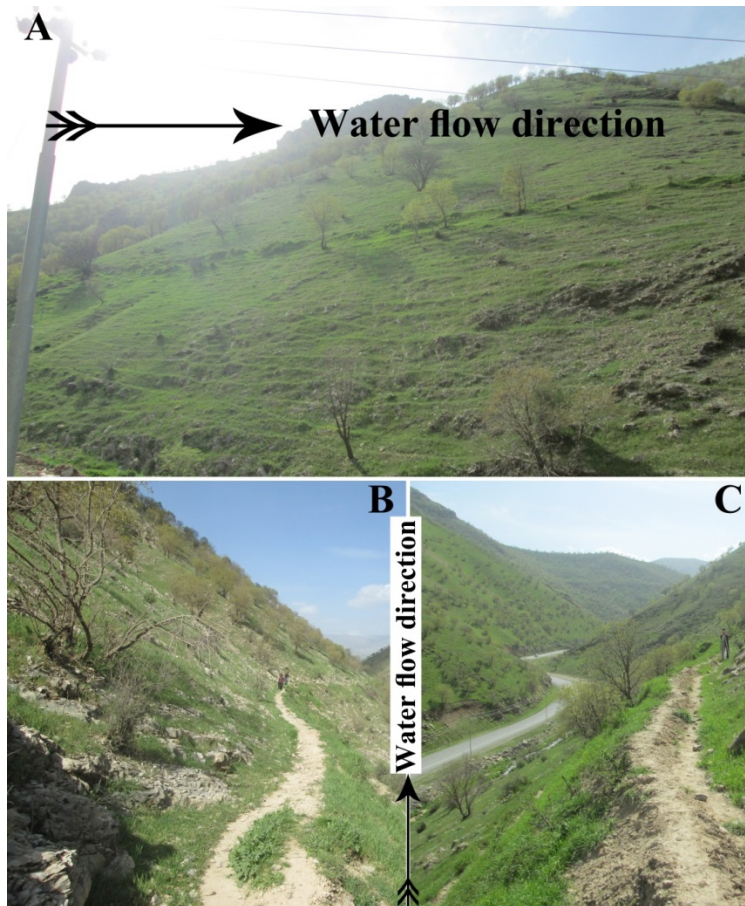


Fig.(5B); The third station in Qaiwan

Comparing the slopes with the photos in all stations; the elevation of the region appears opposite to the water flow direction.

The effect may be due to; the false horizon line and the surrounding landscape that tilts in one direction, while the road tilts in another. Because of the multiple angles, the human eye is fooled; the water channel looks like it is going uphill, even though it is really going downhill.

### **Conclusion**

From this study we investigated that:

1. A magnetic hill reported in Kurdistan, with the name of: Kormal's magnetic Hill, N 351508.4°, E 460351.4° of physical slope 0.017

2. A downhill preceded by the peoples and taxi drivers was perceived as uphill.

3. The water flow elevation in Qaiwan : N 354325.01°, E 452446.1° is a normal condition the abnormalities seen by the Villagers and all ten subjects is a kind of illusion related to the elevation of the region that is opposite to the direction of water flow whose physical slope is positive and about %53.

4. The Anti-Gravity Hills are visual illusions in the natural environment. These effects follow from a misperception of the eye level relative to gravity, caused by the presence of contextual inclines or of a false or slight inclines were always perceived as horizontal.

5. Stronger illusion is obtained when the road meets a sky background as in Fig.(2) and Fig. (4).

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