SPECTRUM

VOL.03 IPhO 2017 NEWSLETTER
YOGYAKARTA, INDONESIA - 19 JULY 2017

NEWS | INTERVIEWS | FUN FACTS | INSPIRATIONS

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EDITORIAL DESK

SPECTRUM as the newsletter editorial name is taken from spectrum widely known in physics world as an image or distribution of components of any electromagnetic radiation arranged in a progressive series according to wavelength that can be found in rainbow as the separation of colors.

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MINISTRY OF EDUCATION AND CULTURE REPUBLIC OF INDONESIA

48th IPhO 2017 YOGYAKARTA - INDONESIA 16 - 24 JULY 2017

WHAT TO BRING BACK FROM YOGYAKARTA

It is the halfway through IPhO 2017, and you still have 4 days left to spend in Yogyakarta. Before you go home, buying souvenir or local snacks to your family must be a mandatory thing you need to do. At least, you need to bring back a few merchandises for yourself, as a token of memories from your travel. But, what is the best thing to bring back from Yogyakarta? SPECTRUM had curating some of them, worth to buy before you leave as shown below.

BAKPIA PATHOK

Although Bakpia is not originated from Yogyakarta at first, this sweet snack has been long known as the signature food of Yogyakarta. It is a crispy bun with various filling such green bean, chocolate, durian, cheese and others. They usually come in pack of 12 or 16, depends on your wish. This tasty delicacy is surely the thing you need to bring back to your home and enjoy together.

GUDEG

Indonesian famous cuisine! Gudeg is a sweet side dish perfectly fitted for rice. It is created with jackfruit mixed with palm sugar, galangal, and other spices. But, this food can't hold longer than 3 days. So, you need to consider on buying the canned or dried gudeg. But believe us, the taste of this food weird in a good way! Who would think that we can eat fruit with rice? Only in Yogyakarta!

BATIK

Don't leave Yogyakarta without at least bring back a piece of Batik to your home! Comes with various model, you can find almost everything in Batik, from night dress, t-shirt, work shirt, to flip flop. The unique pattern of Batik represents Yogyakarta's culture that will remind you of the city all the time. It is also acknowledged by UNESCO as the cultural heritage of humanity made in the hand of Indonesian.

GETTING CLOSER TO FATHER OF AVIATION DESIGN OF INDONESIA

When it comes to aviation design, Indonesia has a quite long journey in the past. The country ever had well-known company that specialized in aircraft design and manufacture named Indonesian Aerospace or "PT. Dirgantara Indonesia" in local language. This company produced around dozens of design, component, armament, and also joint-production of plane back at 1980's. It was pioneered at Yogyakarta, the city where IPhO are conducted!

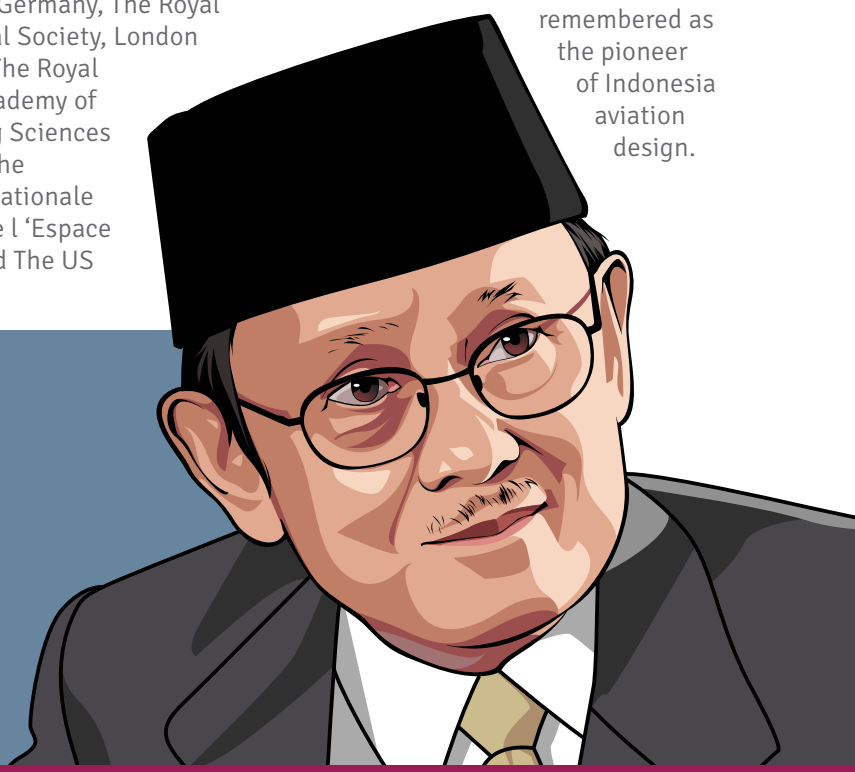
Behind the hubbub, there was a man who was brave enough to start the company. It was B.J. Habibie, a former President of Republic of Indonesia who happened to be a genius scientist as well. Habibie started the journey to become the father of Indonesian aviation when he studied back at Germany. Young Habibie learned and understood the importance of the aerospace and aviation for Indonesia. The young Habibie studied in Germany majored in Aerospace Engineering with a specialization in aircraft construction.

The Invention of Habibie Factor

Habibie was a genius inventor drove into Habibie factor that was recognized worldwide. It was a formula to calculate the progression of cracks or crack on random. Habibie finding this formula he calls "Habibie Factor". Habibie discovered that this formula can calculate crack progression to the atomic scale construction materials of plane. So Habibie was nicknamed "Mr. Crack" during his time in aircraft industry.

This formula had been recognized by International agencies such as Gesellschaft fuer Luft und Raumfahrt (Institute of Aeronautics and Space) Germany, The Royal Aeronautical Society, London (England), The Royal Swedish Academy of Engineering Sciences (Sweden), The Academie Nationale de l'Air et de l 'Espace (France) and The US Academy of Engineering (USA). In 1967 Habibie was awarded to honorable Professor (professor) at ITB (Bandung Institute of Technology). On the other hand, Habibie was also awarded the Edward Warner Award and Theodore Van Karman Award.

As the fame caught the President of Indonesia at that time, Habibie was called back to the country. He was meant to develop the first aviation manufacture and had a major success. But, during the recession back at 1998, the company was forced to be closed, and re-opened again on 2000. Until now, the company already made 396 units of aircraft that had been exported to 11 countries. Habibie name will be forever remembered as the pioneer of Indonesia aviation design.



BACHARUDDIN JUSUF HABIBIE

3rd President of Republic of Indonesia

Born	:	June 25th 1936 (age 81) Parepare, South Sulawesi, Dutch East Indies
In office	:	May 21th 1998 – October 20th 1999
Preceded by	:	Suharto
Succeeded by	:	Abdurrahman Wahid
Spouse	:	Hasri Ainun Besari (m. 1962—2010, her death)
Almamater	:	Bandung Institute of Technology (Mechanical Engineering)
Occupation	:	Engineer, Aviation Industrialist, Politician

Source: *tirto.id & penggagas.com*

MEET THE LEADERS

Jacek Jaslak

Leader, Poland

"We were working very hard to translating for the experimental test. It was a really hard day because the problems were long and there were many queries, many people ask questions. It took time. Some of us finish the work about 5 AM and some of us finish the work a little bit earlier. In fact, there is no time to rest, especially in preparing the translating problems."

Jaewan Kim

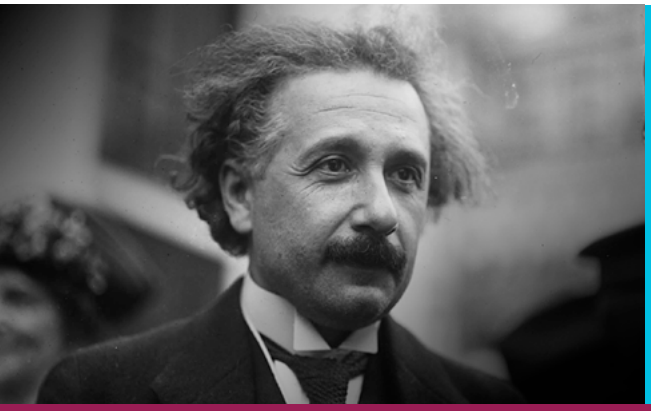
Leader, Republic of Korea

"Last night, we interpreted the experimental problems. So, it's started around 3 PM on Monday, but it ends on this morning. We worked overnight and the problem was very interesting. I think it will be very inspiring to the students. There was a problem because the procedures for the experiments were not well specified, so there were some comments, we modify continuously, and improved the sentences. I finished my job this morning at 6 o'clock."

Tawinan Cheiwchanchamnangij

Leader, Thailand

"It was intense. The preparation for the experimental test was really nice, the experiments were very interesting. But, we got a bit difficult about IT system and that takes quite a bit of time. The network was quite difficult to connect and the translation tool is a bit difficult to track the progress. I mean, when the committee changes something to the text, we do not know where do they change it. We translate into the Thai language. That's a bit difficult too about the translation program, especially about the font. We finished it on 6 AM. Then, we took rest for one hour, rushed for the breakfast, and prepared for the excursion to Borobudur."



CREATIVITY IS CONTAGIOUS.

PASS IT ON

ALBERT EINSTEIN

WHY DO THEY CHOOSE PHYSICS?

Tamisha Segbefia

Student, Ghana

"I choose physics because it' as nature call to solve everything related to life. Physics can be used in our daily life, just like speedometer and playing soccer. It catalyzes the invention of useful thing that is trying to fix problem that we face. With it, we can make our life easier"

Chau Chun Wang

Student, Hong Kong

When I was young I was interested on how the cotton worked. I was stopping on a fun fair and begin to wonder about the theory behind of them. It was wonderful. Since then, I love physics and its world.

Khachatur Nazaryan

Student, Armenia

" Starting from my childhood, I was interested in life or how it works, like how nature is working. So, when I was driving on the street, I was like, want to create something new and positive to see how it works as a mechanic. I have made it so far. Maybe, it was the main reason I just physics. "

FUN FACT

Bobobudur Temple is the BIGGEST Buddhist temple ever recorded by Guinness World Record. It has 15,129 meters square width, 42 meters height with 10 levels, and total more than 1 kilometer of wall relief and 72 stupa.

SPARKS FROM THE PAST

A TRIP TO BOROBUDUR TEMPLE

Long known for its incredible structure, Borobodur Temple that resided on Magelang is a proof that Indonesian in the past was a handful of great architects and researchers. All leaders of IPhO 2017 were invited to experience its spark. The temple came up with a lot of attraction, start from merchandise market, Buddhism-rooted stupa, to magnificent relief about life and death.

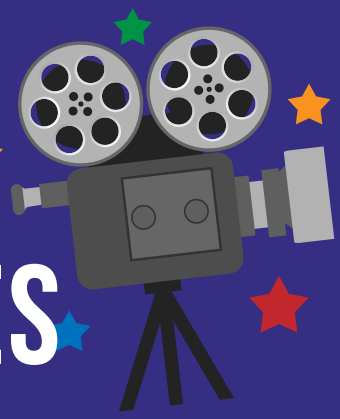
While in Borobudur, the leaders go around Borobudur and take pictures of the scenery there. One of the leaders from Lithuania, Jevgenij Chemliov, recalled that previously Borobudur had been destroyed by the eruption. "Lot of hills and mountain around. The guide said there are some active volcanoes fifty kilometers from here and seven or six years ago there was an eruption. Everything covered with volcanic ashes and now everything just rebuilds, reconstruct, and cleaned. Very amazing," he said. Borobudur is located in the south of Magelang city. It surrounded by mountains. Borobudur is located between two twin volcanoes, there are Sundoro-Sumbing and Merbabu-Merapu. According to local myth, the area known as "Kedu Plain", a Javanese sacred place. During repairs around the beginning of the 20th century, it was noticed that three Buddhist temples in the region, Borobudur Temple, Pawon Temple, and Mendut Temple, are positioned along a straight line.

Until right now, Borobudur is still used for pilgrimage. Once a year, Buddhists in Indonesia celebrate Vesak Day at the temple. On that day, Borobudur became the destination of many foreign tourists who want to take pictures or watch the ritual of the Buddhists. Evidence in there leads to the conclusion that Borobudur was built in the 9th century and abandoned following the 14th-century decline of Hindu kingdoms in Java and the Javanese conversion to Islam. Sir Thomas Stamford Raffles sparked the worldwide knowledge of its existence in 1814. The largest restoration project was undertaken between 1975 and 1982 by the Indonesian government and UNESCO. Then, the temple was listed as a UNESCO World Heritage Site.

Another leader from Denmark impressed by the restoration of the temple. "I think it is impressive to see how it is restored. How complex it was, to be able to walk around on the different levels, and seeing all the statues also all the reliefs," Niels Erik Wegge said.

All leaders and observers were ready to undergo discussion and translation session again, with more knowledge and insight to be brought to the home. The sparks of learning never died and the passion of revealing the universe's biggest mystery still continues as the sun set through Borobudur Temple.

4 WORST PHYSICS ERRORS IN MOVIES



Being a science lover becomes difficult when we also like watching science fiction movies. Maybe some of us often think that "alien cannot do that" or "black hole should not be there". It is hard to hold such thoughts, sometimes. Here are four mistakes that are quite fatal in the movies, scientifically.

SHOOTING RANGE

When you get shot by a gun, you will not fly backwards. This is because a bullet does not weigh very much.

A 9mm bullet weighs less than a third of an ounce. If it is travelling at 1.300ft a second (about right) it will knock a 12-stone man backwards at around 0.15 feet a second. He might, in short, stumble slightly. Not hurtle back 20 feet and smash through a shop window.

In real life, bullets don't spark when they hit things. Well done to Saving Private Ryan for doing that accurately.

SLOW-MOVING LASERS

Laser beams move in the speed of light. Why? Because they are light. What they cannot do is stab you to chop your body into pieces. They also cannot shine in space because there is no air that can reflect light. Too bad, Star Wars.

THE EXPLOSION WAS TOO COOL

Lots of explosions, lots of action? Actually, cars almost never explode when they collide. The combination of fuel and air in the tank is too much. Similarly, research shows that cigarettes will not set fire to puddles of petrol, no matter how nonchalantly you flick one in.

REALLY, CONSERVATION OF ENERGY?

The Matrix is a great movie. Lots of things don't make sense from a physics point of view, but we can forgive that, because it's meant to be a computer simulation.

But the film is based on the idea that humans are kept alive as a sort of electricity generator. This is impossible. They will need more energy to keep alive than they will produce. It's like saying you'll power your car with batteries and keep the batteries charged by running a dynamo from the wheels.

Source: *The Telegraph*

1. Shooting range: https://i.ytimg.com

2. Slow-moving lasers: https://i.ytimg.com

3. The explosion was too cool: http://www.imfdb.org

4. Really, conservation of energy?: https://static1.squarespace.com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