Международна космическа колония ТАНГРА

Инна Божинова, Мая Петкова, Вергил Йотов, Павел Софрониев, Крикор Крикорян, Диана Софрониева, Анна Миленкова, Добряна Колева, Ивайло Димитров, Юлкер Мехмед

Математическа гимназия, Пета езикова гимназия, Професионална гимназия по строителство и архитектура

Ръководител – Веселка Радева

НАОП Варна

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Coriolis effect

The Coriolis effect is an apparent deflection of moving objects from a straight path when they are viewed from a rotating frame of reference (like from the inside of our station). Sometimes the Coriolis force is called a fictitious force (or *pseudo force*), because it does not appear when the motion is expressed in an inertial frame of reference, in which the motion of an object is explained by the real impressed forces, together with inertia. In a rotating frame, the Coriolis force, which depends on the velocity of the moving object, and centrifugal force, which does not, are needed in the equation to correctly describe the motion.

Our 'green zone' is also a rotating frame of reference so people there will experience

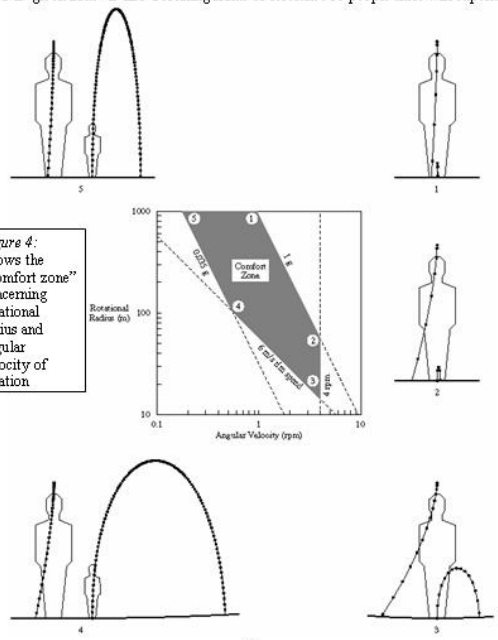

Figure 4: Shows the "comfort zone" concerning rotational radius and angular velocity of rotation

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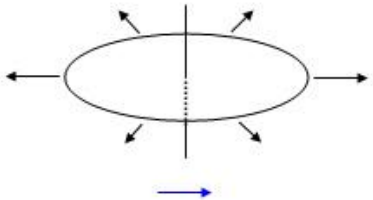


Figure 1: The blue arrow points the direction of rotation of a disk around an axis. The black arrows show the directions of the centrifugal force.

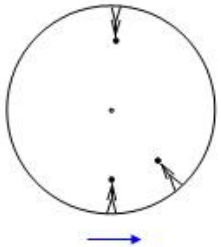


Figure 2: Here we show the relative feeling for "up" and "down". The dot in the centre of the disk is the axis of rotation of the disk. The blue arrow once again points the direction of rotation.

When we rotate a disk a feeling of a force appears for someone who stands on it (Figure 1, Figure 2). The acceleration that "pulls" this person to the periphery of the disk can be expressed in the following way:

$$(1)\ a = \omega^2 r = \frac{4\pi^2 r}{P^2},$$

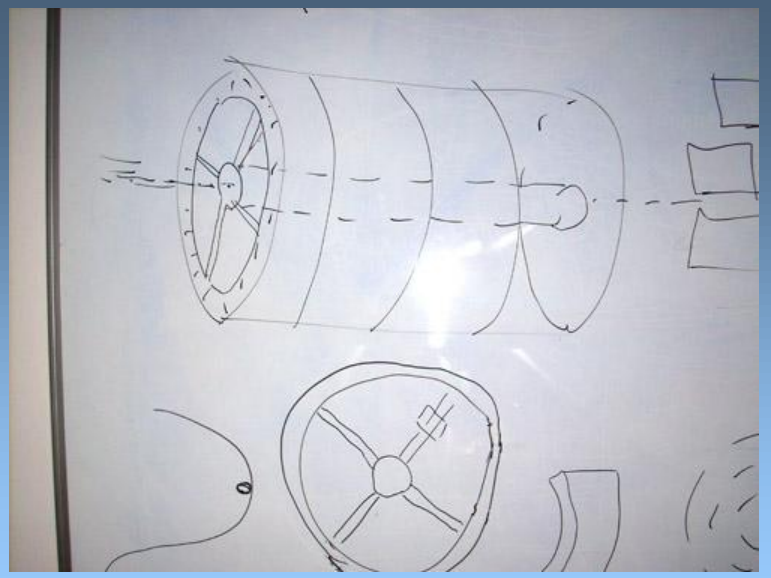
where r is the distance from the axis of rotation and P is the period of rotation.
We want the acceleration that people feel at the place where they live to be between 0.9g and 1g. Using (1) we can express the nearest (r_1) and the furthest away (r) point with suitable conditions.

$$r = \frac{gP^2}{4\pi^2}; \quad r_1 = 0.9 \times \frac{gP^2}{4\pi^2}$$

So there is a layer with thickness $\Delta r = r - r_1$ that we can call 'green zone' – the living zone.

$$\Delta r = r - r1 = 0{,}1r$$

Място и гравитация



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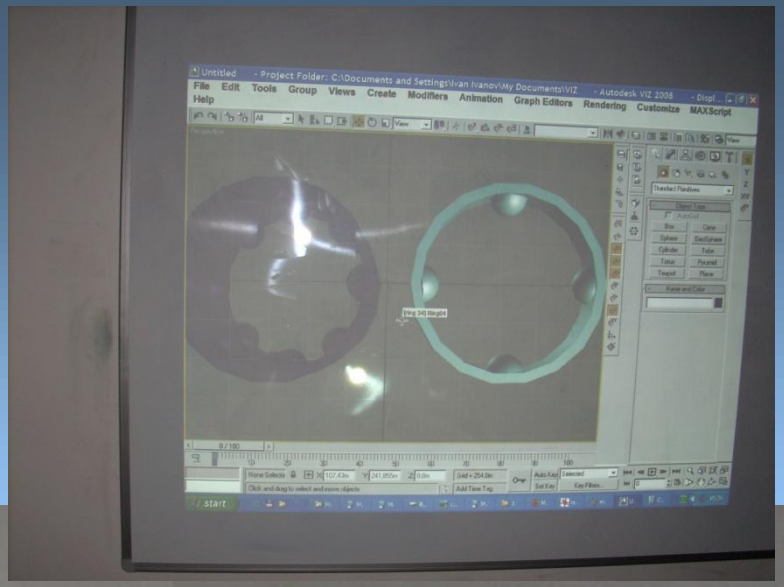
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File Edit Tools Group Views Create Modifiers Animation Graph Editors Rendering Customize MAXScript
Help

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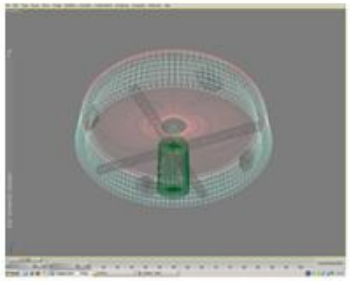
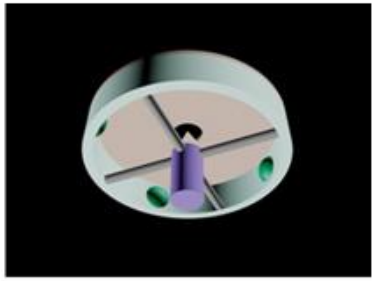
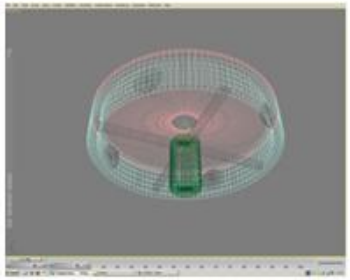
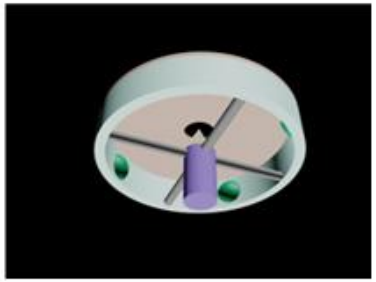
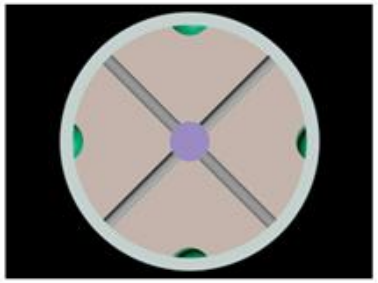







Животоподдръжка

Биосфера и екология

Ден 1

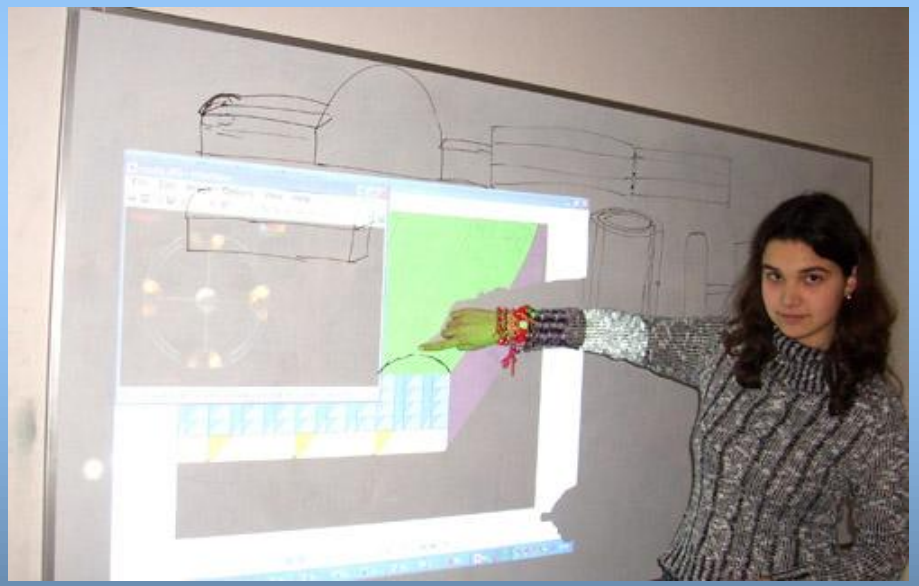
Ден 5

Ден 6

Ден 9

Ден10

Ден14



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Appendix 2. Constitution

WE, the multinational founders of the first Space Settlement,
PLEDGING our loyalty to the universal human values of liberty, peace, equality, and justice,
HOLDING as the highest principle the rights, dignity, and security of the individual,
INSPIRED by the great prospects opening up before mankind as a result of man's entry into outer space,
RECOGNIZING the principles of international law,
TAKING ACCOUNT of the opened for signature at Moscow, London, and Washington on 27 January, 1967 Outer Space Treaty,
ESTABILISH this

Constitution

Chapter One
FUNDAMENTAL PRINCIPLES

Art. 1
(1) Tangra shall be a self-governing colony with democratic government.
(2) The entire power of the Colony shall derive from the people. The people shall exercise this power directly and through the bodies established by this Constitution.
(3) No part of the people, organization, institution or individual shall usurp the expression of the popular sovereignty.

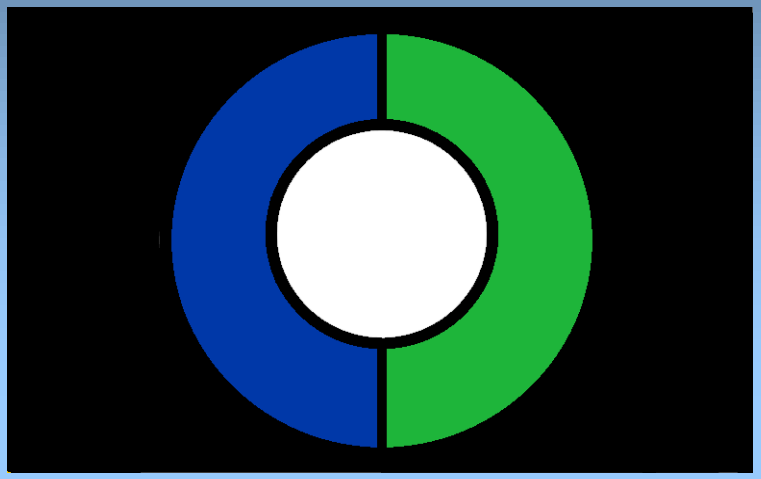
Art. 2
(1) The Colonial authorities shall dispose of the entire usable area of the Colony. No autonomous territorial formations shall be allowed to exist therein.
(2) No part of the people, organization, institution or individual shall possess any portion of the territory of the Colony. The conditions on which usable areas are granted on lease shall be estabilished by law.

Art. 3
The language of the Colony shall be English.

Art. 4
(1) The emblem of the Colony shall depict an ardent circle on azure and vert shield.
(2) The seal of the Colonial authorities shall depict the emblem of the Colony.
(3) The flag of the Colony shall be a white circle on blue and green circle on black background.

Конституция и администрация

Знаци на колонията



Представяне на проекта на XXVII годишна международна конференция на НАСА, Вашингтон

Постери, представящи проектите на участниците в конкурса на НАСА

Народна обсерватория и планетариум, Варна