

CLASSICAL MECHANICS III 8 09 FALL 2014 ASSIGNMENT 1

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What are the two main failures of classical mechanics? Classical or Newtonian mechanics were unable to explain phenomena such as black body radiation, photoelectric effect, and the temperature dependence of a substance's heat capacity.

How accurate are the results in classical mechanics? Chaos theory shows that the long term predictions of classical mechanics are not reliable. Classical mechanics provides accurate results when studying objects that are not extremely massive and have speeds not approaching the speed of light.

What is the subject of classical mechanics? Classical mechanics deals with the question of how an object moves when it is subjected to various forces, and also with the question of what forces act on an object which is not moving.

What is the law of classical mechanics? ...the so-called first law of mechanics—namely, that a body in motion, freed from friction and from all other forces, would move, not in a circle, but in a straight line at uniform speed.

What is an example of the downfall of classical mechanics? Line spectra of atoms: In the 19th century, physicists observed that when a sample of a single element (e.g. sodium) was heated it emitted light, but only with a number of characteristic wavelengths, forming what is called a line spectrum. Classical physics was unable to explain this phenomenon.

Is classical mechanics obsolete? Some theories known to be incomplete or in some ways incorrect are still used. For example, Newtonian classical mechanics is

accurate enough for practical calculations at everyday distances and velocities, and it is still taught in schools.

Which is harder classical mechanics or quantum mechanics? Quantum mechanics is harder than classical mechanics in terms of its mathematical structure and conceptual formalism. It starts after you have completed Newton's mechanics, Lagrangian and Hamiltonian mechanics, Hamilton-Jacobi theory, electromagnetic theory, special relativity, etc.

Who is the father of classical mechanics? On this day, in 1642, Sir Isaac Newton was born. He would be 371. Newton was a physicist and mathematician from England. His work laid the foundation of classical mechanics (also called Newtonian physics or mechanics in his honor) and is generally credited with jump starting the scientific revolution.

What is the important formula in classical mechanics? $F=ma$ For every force, there is an equal and opposite force. $\frac{d}{dt} p = F$ If there is no external force, momentum is conserved. An elastic collision is one which conserves total kinetic energy. In an inelastic collision kinetic energy is lost (converted to heat etc).

What is another name for classical mechanics? Classical mechanics is often called Newtonian mechanics because nearly the entire study builds on the work of Isaac Newton.

Do you need calculus for classical mechanics? For any advanced classical mechanics (Lagrangian/Hamiltonian mechanics) you need to learn calculus of variations. What you've listed is generally what is done in an undergraduate mechanics course which usually only requires some simple vector algebra and ordinary differential equations.

What math is used in classical mechanics? Many different mathematical methods and concepts are used in classical mechanics: differential equations and phase flows, smooth mappings and manifolds, Lie groups and Lie algebras, symplectic geometry and ergodic theory.

What is an example of classical mechanics? Examples of classical mechanics include one-dimensional kinematics, projectile motion, gravitation, momentum,

torque, dynamic equilibrium, conservation of energy, and statics. Examples of quantum mechanics include the photoelectric effect, quantum computing, and atomic clocks.

Why is it called classical mechanics? Most of the techniques of classical mechanics were developed before 1900 so the term classical mechanics refers to that historical era as well as the approximations.

What is taught in classical mechanics? Historically, a set of core concepts—space, time, mass, force, momentum, torque, and angular momentum—were introduced in classical mechanics in order to solve the most famous physics problem, the motion of the planets. The principles of mechanics successfully described many other phenomena encountered in the world.

What are two criticisms of classical theory? Criticisms of the classical theory broadly fall into two classes, namely, (i) those which attack the inconsistencies, tautologies and lack of sophistication of the formulations of classical theorists - initiated mainly by Simon, and (ii) those which take issue with the pro-management bias of classical theory.

What are the failures of classical electron theory? Classical free electron fails to explain the temperature dependence of electrical conductivity 2 . fails to explain specific heat of a solid. 3. fails to explain Wiedemann-franz law that is at lower temperatures, the ratio of thermal conductivity to electrical conductivity is proportional to temperature.

What are the failure of classical wave theory? According to classical wave theory, if light of higher intensity is used, the kinetic energy of an ejected electron can be increased. ... However, it cannot explain why maximum kinetic energy is dependent on the frequency and independent of intensity.

Why did the classical theory fail? Classical physics could not explain the phenomenon related to the atomic domain. It could not explain the hydrogen spectra. This theory was not able to explain the stability of atoms(radiations due to acceleration). The enormous ranges of conductivity of metals compared to insulators also could not be explained.

Do bassists need big hands? Most of us have an average reachable range across the bass fretboard and work to improve our dexterity, reach and speed across the fretboard. If you're someone with small hands with a drive to play bass- you're no different than the rest of us. The learning process is still the same.

Why do bassists use two fingers? Alternating Fingers To develop plucking speed and efficiency, it is important that you use at least two fingers to pluck. Most people use their index (1) and middle (2) fingers and alternate them.

What fingers do bass players use? Unless you're playing slap style, it's most common to play with two fingers. Most bassists use their index(1) and their middle finger(2) to pluck. The key to playing fluid and smooth grooves is to keep a steady rhythm. To do that, practice alternating between your first two fingers.

Why don't bass players use picks? Bass Players and Genres Who Utilize Finger-picking Bass lines played in this manner tend to be more legato, which means they sound more connected, and flow with ease. Bassists such as Flea and Geddy Lee are acclaimed for their bass skills, and are showmen for bassists who don't play with a pick.

Why do bassists rarely sing? Bassists have to move their fingers in intricate and sometimes complicated ways to form a secondary melody line, distinct from the vocal melody; and the rhythms, too, are often at odds with the vocals.

How to get better at bass with small hands?

Is bass better with pick or fingers? Bassists who use picks often have increased speed and a brighter, more articulate sound than bassists who play with their fingers. Increased Speed and Precision. Playing with a pick allows for faster and more precise playing. This makes it easier to execute fast runs and technically demanding solos.

Do bassists use their pinky? I'd still recommend trying to use pinky on all 4 strings. It's the longer, more difficult path, but it will lead to more beautiful places down the road. The only rule in bass playing is to use alternate plugging and fretting finger each and every time no exceptions.

Why do bassists tape their fingers? They explained to me that my finger tips along with my tongue were the most sensitive part of my body and needed protection if I was to continue my dynamic style of playing. They saw no need for me to endure so much pain while I was playing. As musicians we need to take care of our hands.

What fingers do you use for bass? Now we can talk about the two-finger technique in bass playing. This fundamental bass technique alternates between your index and middle finger when plucking the bass strings. As mentioned earlier, achieving a consistent sound and pressure on each string is typically easier with a single finger.

Do bassists get carpal tunnel? The number one causes of carpal tunnel for bassists with regard to the left hand is poor form when holding the neck. Long periods of time, without breaks and high stress on the wrist can come from the baseball grip on the neck.

What is the best hand position for playing bass? Remember not to close your hand! Place the tip of your thumb on the middle of the back of the bass neck. Make sure that your fingertips are pointing upward. Gently spread your fingers onto the strings, with each finger close to an adjacent fret.

Why do bass players avoid open strings? One of the main reasons to avoid using open strings is the change in tone quality they introduce. In comparison to a scale played entirely on closed strings, an open string scale may sound less consistent. Closing the notes by avoiding open strings creates a more even and balanced tone.

Is it a sin to play bass with a pick? Truthfully, there is no right or wrong way to play a bass guitar. There isn't even a preferred way. Any method you use to get sound out of the thing—fingers, pick, thumb, those weird stick things Tony Levin uses, telekinesis, whatever—works just fine. It's purely a matter of personal preference.

Are bassists more in demand than guitarists? Yes. There are easily 3-4x the number of guitarists than bassists.

What makes a bad bass player? THE WORST MISTAKES BASS PLAYER CAN MAKE ON STAGE Usually, the worst mistakes a bass player can make on stage are

not related to which notes you play, rather the timing. If you start playing out of time and out of sync with the drummer – everyone will start noticing that something is very wrong.

Why don't people play chords on bass? A chord is a group of notes played together at the same time. Bassists don't play chords as often as guitarists or pianists do. This is because playing several low-pitched notes at the same time can sound muddy. Playing chords on bass can sometimes fill up too much sonic space competing with the rest of the band.

Why is bass unpopular? Range. The first reason for its lack of recognition is definitely its musical range. Bass is responsible for the lower range of the music we listen to, and that can usually make it hard to identify when not trained to do so. As it lays under the rest of the instruments in the mix, one has to focus to isolate it.

Is bass easier than guitar? Those with smaller hands might find learning bass much more difficult than guitar. Conversely, those who struggle with chords might find guitar much harder to learn. We recommend that complete newbies choose the instrument they like best and find a good teacher or online resource for learning.

Do bass players use their pinky?

Do bass players have strong fingers? It will give you good technique. Also, you don't really need strong hands to play bass. You just need enough force to get a solid round note out in the fretting hand, and enough force to get the string moving in the plucking hand.

Why don't bass players use a pick? Usually, bass players report having more control when using their fingers, giving them a richer tonal variety, and beefier tone. In Addition, the popular slap technique used by many bassists can be easily implemented, if you don't hold any pick between your fingers.

Did Paul McCartney play bass with a pick? Sometimes Paul McCartney uses a pick and other times he doesn't, he then uses his fingers.

Do bass players use their thumb?

Why do bass players make funny faces? Facial expressions can also help musicians communicate emotions and artistic expression. Musicians often use their facial expressions to convey the mood and interpretation of the music they're playing, which creates a more immersive and captivating musical experience.

Why do bassists wear wristbands?

Why do bass players tape their fingers? FINGERING TAPE: To assist beginning bassists with correct finger placement, some bass teachers use thin strips of colored tape (e.g. 1/8" graphic chart tape or pinstripe auto detailing tape) to mark where students should place their fingers on the bass fingerboard.

Is the bass easier than guitar small hands? Those with smaller hands might find learning bass much more difficult than guitar. Conversely, those who struggle with chords might find guitar much harder to learn. We recommend that complete newbies choose the instrument they like best and find a good teacher or online resource for learning.

Do guitarists need big hands? The truth is, that the guitar is designed with every hand size in mind. But there are some trade-offs. If you have big hands, it might be easier to make bar chords but harder to play single notes. Whereas for someone with small hands the opposite may be true.

Do you need big hands to pitch?

Is bass better with pick or fingers? Bassists who use picks often have increased speed and a brighter, more articulate sound than bassists who play with their fingers. Increased Speed and Precision. Playing with a pick allows for faster and more precise playing. This makes it easier to execute fast runs and technically demanding solos.

What is the hardest thing to play on bass?

Is bass the easiest instrument in a band? The beauty of bass lies in its simplicity and the foundational role it plays in music. It's like the glue holding a band together—it provides the rhythmic and harmonic bedrock that every song builds on. Because of this, it's considered to be one of the most beginner-friendly instruments.

Can a guitar player easily play bass? The strings are basically the same – how hard can it be? Unfortunately it's not quite that simple. Many guitar players fall into the trap of “playing bass like a guitarist”. Learning how to think and play like a bassist is key to avoiding this pitfall.

Which guitarist has the smallest hands? Guitarists such as Angus Young, Prince, Nancy Wilson, and Paul Simon are small-statured people with small hands yet they're still great players. Even Stevie Ray Vaughan, who was only 5'5”, had only average-sized hands.

Why are guitarists attractive? There are several theories: Playing an instrument is seen as a sign of intelligence and hard work, traits that are pretty attractive to women. Also, playing music is often linked with creativity, intelligence, and emotional expression, qualities valued in a potential mate.

What counts as big hands?

Do bigger hands hit harder? To land a powerful punch, you will need to have the proper form and correct technique, so you can control the force of your punch. You also need excellent balance and coordination to deliver hard punches, so hand size has nothing to do with these!

Is it harder to pitch to a lefty? Statistically in Major League Baseball (MLB), left-handed batters are less successful against left-handed pitchers than right-handed batters are against right-handed pitchers, leading to some left-handed pitchers being used strategically as left-handed specialists.

Can you pitch with small hands? The “C” changeup can be a good option for players who have smaller hands or have trouble with their feel for the circle changeup. To create the grip for a “C” changeup, a pitcher should attempt to hold the baseball like a football, where all four fingers line up opposite the thumb to make the letter “C.”

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Do you use your pinky when playing bass?

Q: What is the Computational Beauty of Nature?

The Computational Beauty of Nature, written by Jurgen Schmidhuber, explores the intersections of computation, nature, and art. It delves into the theory of computation and its application in understanding and simulating natural phenomena like fractals, chaos, and complex systems.

Q: What are Fractals?

Fractals are mathematical objects that exhibit self-similarity at all scales. They have intricate patterns that repeat themselves across different levels of magnification. Fractals occur widely in nature, such as in coastlines, snowflakes, and plant structures.

Q: What is Chaos?

Chaos refers to systems that are highly sensitive to initial conditions. Small changes in the system's initial state can lead to dramatically different outcomes. Chaos manifests in various natural phenomena, including weather patterns, turbulence, and heart rhythms.

Q: What are Complex Systems?

Complex systems are composed of many interconnected elements that interact in complex ways. They exhibit emergent properties, meaning that their overall behavior cannot be fully predicted from the properties of their individual components. Examples of complex systems include the human brain, ecosystems, and economies.

Q: How does Adaptation relate to Computation?

Adaptation refers to the ability of organisms to modify their traits over time in order to better suit their environment. Computational models can simulate and explore the

evolutionary processes that lead to adaptation. These models aid in understanding how biological systems respond to changing environmental conditions.

Teori Produksi oleh Soekartawi: Tanya Jawab

Paragraf 1: Apa itu Teori Produksi oleh Soekartawi? Teori Produksi oleh Soekartawi adalah sebuah teori yang digunakan untuk menjelaskan hubungan antara input (faktor produksi) dan output (hasil produksi) dalam proses produksi. Teori ini dikembangkan oleh ekonom Indonesia, Soekartawi Atmadja.

Paragraf 2: Pertanyaan 1: Apa saja faktor produksi yang diidentifikasi dalam teori Soekartawi? Jawaban: Soekartawi mengidentifikasi tiga faktor produksi utama: tanah (sumber daya alam), tenaga kerja (sumber daya manusia), dan modal (mesin, bangunan, dll.).

Paragraf 3: Pertanyaan 2: Bagaimana Soekartawi menggambarkan hubungan antara faktor produksi dan output? Jawaban: Soekartawi menyatakan bahwa hubungan antara faktor produksi dan output bersifat proporsional. Artinya, jika salah satu faktor produksi ditingkatkan sementara yang lain tetap konstan, output akan meningkat secara proporsional.

Paragraf 4: Pertanyaan 3: Apa itu hukum hasil yang semakin berkurang? Jawaban: Hukum hasil yang semakin berkurang menyatakan bahwa setelah titik tertentu, penambahan satu unit faktor produksi memberikan peningkatan output yang semakin kecil. Hal ini terjadi karena faktor produksi lain menjadi relatif lebih langka.

Paragraf 5: Pertanyaan 4: Bagaimana Teori Produksi Soekartawi dapat digunakan dalam praktik? Jawaban: Teori Produksi Soekartawi dapat membantu perusahaan dalam membuat keputusan tentang penggunaan faktor produksi secara optimal untuk memaksimalkan output. Ini juga dapat digunakan untuk menganalisis dampak perubahan teknologi atau sumber daya alam pada proses produksi.

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