

A Note on Terminology

- inflation of terms •

hadron therapy

charged hadron therapy

particle therapy

charged particle therapy

proton therapy

carbon ion therapy

light ion therapy

heavy ion therapy

ion beam therapy



A Note on Terminology

• which term to use? •

hadron therapy

charged hadron therapy

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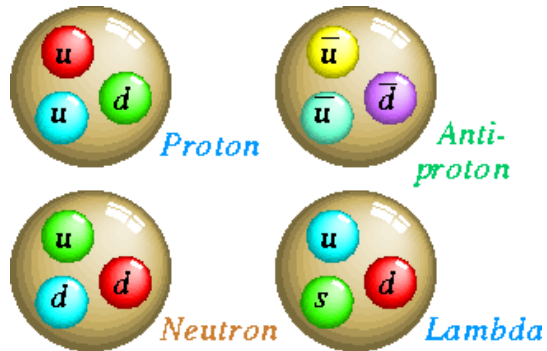


A Note on Terminology

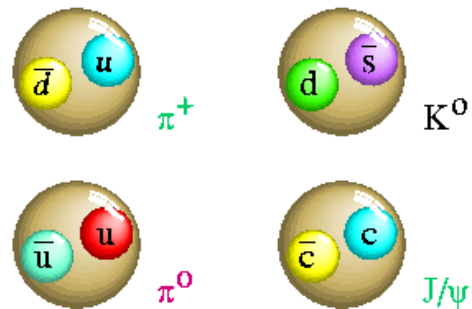
- definition: hadrons vs. ions •

Hadrons: subatomic particles built from quarks

baryons

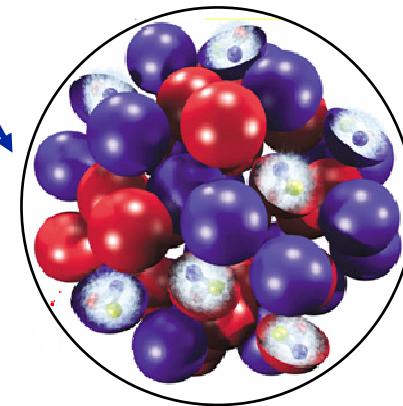


mesons



Ions: charged atoms or molecules with a lack or excess of electrons

Nucleus: ion with maximum positive charge



A Note on Terminology

• which term to use? •

hadron therapy: p^+ , n^0 , π^+ , π^0 , π^- , δ^{2+} , δ^+ , δ^0 , δ^- , λ^0 ,

charged hadron therapy

particle therapy

charged particle therapy

proton therapy

carbon ion therapy

light ion therapy

heavy ion therapy

ion beam therapy

A Note on Terminology

• which term to use? •

hadron therapy: p^+ , n^0 , π^+ , π^0 , π^- , Σ^{2+} , Σ^+ , Σ^0 , Σ^- , Λ^0 , \times

charged hadron therapy

particle therapy

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carbon ion therapy

light ion therapy

heavy ion therapy

ion beam therapy

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hadron therapy: ~~p⁺~~, ~~n⁰~~, ~~π⁺~~, ~~π⁰~~, ~~π⁻~~, ~~δ²⁺~~, ~~δ⁺~~, ~~δ⁰~~, ~~δ⁻~~, ~~λ⁰~~, ~~X~~

charged hadron therapy: p⁺, π⁺, π⁻, δ²⁺, δ⁺, δ⁻, ...

particle therapy

charged particle therapy

proton therapy

carbon ion therapy

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heavy ion therapy

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hadron therapy: p^+ , ~~n^0~~ , ~~π^+~~ , ~~π^0~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^0~~ , ~~δ^-~~ , ~~λ^0~~ , ~~X~~

charged hadron therapy: p^+ , ~~π^+~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^-~~ , ... ~~X~~

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charged hadron therapy: p^+ , ~~π^+~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^-~~ , ... X

particle therapy: any corpuscular body

charged particle therapy

proton therapy

carbon ion therapy

light ion therapy

heavy ion therapy

ion beam therapy

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hadron therapy: p^+ , ~~n^0~~ , ~~π^+~~ , ~~π^0~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^0~~ , ~~δ^-~~ , ~~λ^0~~ , X

charged hadron therapy: p^+ , ~~π^+~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^-~~ , ... X

particle therapy: any corpuscular body too vague

charged particle therapy

proton therapy

carbon ion therapy

light ion therapy

heavy ion therapy

ion beam therapy

A Note on Terminology

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hadron therapy: p^+ , ~~n^0~~ , ~~π^+~~ , ~~π^0~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^0~~ , ~~δ^-~~ , ~~λ^0~~ , ~~X~~

charged hadron therapy: p^+ , ~~π^+~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^-~~ , ... ~~X~~

particle therapy: any corpuscular body **too vague**

charged particle therapy: e^- , ions and charged subnuclear particles

proton therapy

carbon ion therapy

light ion therapy

heavy ion therapy

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A Note on Terminology

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proton therapy: p^+ **too restricted**

carbon ion therapy

light ion therapy

heavy ion therapy

ion beam therapy

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proton therapy: p^+ **too restricted**

carbon ion therapy: C^{6+}

light ion therapy

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ion beam therapy

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proton therapy: p^+ **too restricted**

carbon ion therapy: C^{6+} **too restricted**

light ion therapy: ? He^{2+} , Li^{3+} , Be^{3+} , B^{3+} , C^{6+} , Ne^{10+} , Ar^{18+} ?

heavy ion therapy

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ion beam therapy

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charged hadron therapy: p^+ , ~~π^+~~ , ~~π^-~~ , ~~δ^{2+}~~ , ~~δ^+~~ , ~~δ^-~~ , ... ~~X~~

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ion beam therapy

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carbon ion therapy: C^{6+} **too restricted**

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heavy ion therapy: $?C^{6+}$, Ne^{10+} , Ar^{18+}? **too vague**

ion beam therapy: p^+ , He^{2+} , Li^{3+} , Be^{3+} , B^{3+} , C^{6+} , Ne^{10+} , Ar^{18+}

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ion beam therapy: p^+ , He^{2+} , Li^{3+} , Be^{3+} , B^{3+} , C^{6+} , Ne^{10+} , Ar^{18+}

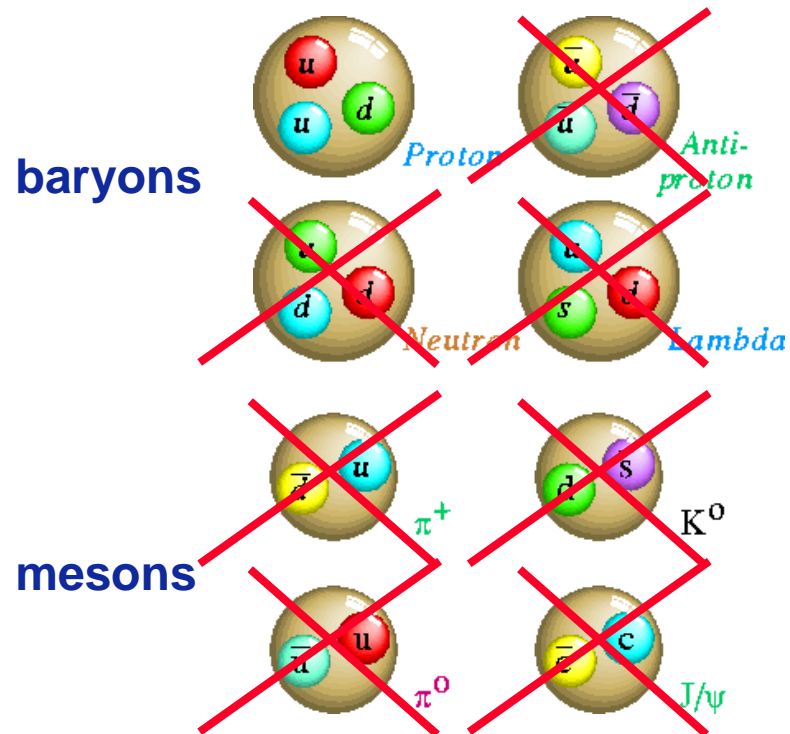


comprises all relevant particles

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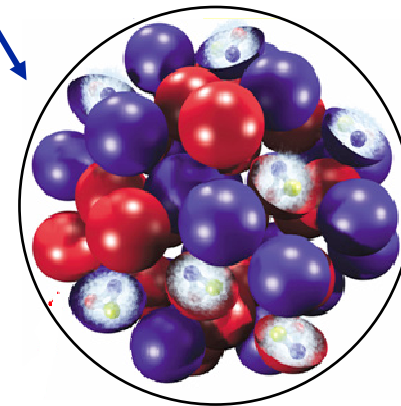
- hadron therapy vs. ion beam therapy •

Hadrons: subatomic particles built from quarks



Ions: charged atoms or molecules with a lack or excess of electrons

Nucleus: ion with maximum positive charge
subatomic particle built from 2 types of baryons



therapy with protons or other ions = IBT

A Note on Terminology

- ion beam therapy vs. ion therapy •

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What is Negative Ion Therapy?

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Negative ion therapy is an alternative form of health treatment that is based on the idea of using negative ions to drain the body of toxins that lead to a number of different health problems. While this pseudoscience is not generally accepted by the established medical community, many people report improvements in specific health ailments after undergoing the therapy, or making use of specially designed equipment to ride the home of irritants and toxins that inhibit the action of the negative ion charge in the space.

The basis for negative ion therapy as a health care alternative rests in the idea that the atmosphere is loaded with negatively charged electrons or ions. By using those electrons to remove elements that have an adverse effect on the physical and emotional well being of the individual, the body's natural defense system can begin to make the necessary repairs and bring the individual back to a healthy state. Because the purpose of negative ion therapy is to drain the toxins from the environment and the body, any condition that is interfering with the natural function of the muscles and nervous system are isolated and reduced through continued administrations of the therapy. As the impediments to good health are brought under control, the individual begins to enjoy an enhanced state of physical and mental health.

While negative ion therapy is not widely endorsed, there have been a few controlled studies that indicate the therapy does produce some positive effects. People suffering with bronchial issues as well as various types of allergies have responded well to negative ion therapy. There is also some evidence that the use of this type of therapy can be helpful with lowering high blood pressure and ease the effects of stress and anxiety.

It is possible to undergo negative ion therapy with the help of a healthcare practitioner. The treatments usually take place in an environment that is sterile and relatively free of any toxins that could exacerbate an existing health ailment. It is also possible to purchase a device known as a negative ion generator to reduce the presence of animal dander, tobacco smoke and mold in the home. The use of devices of this nature often lead to improving conditions for people with allergies and various types of respiratory ailments.