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The η decay into 3π in asymmetric nuclear medium

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- P. 1 Abstract: In the third line from the bottom, the words “shows only $\dots$ at ρ_0 ” should be replaced by “is less enhanced with a factor about two at ρ_0 ”.
- P. 11: Equation (43) should be replaced by

$$\begin{aligned} \mathcal{M}_{\eta \rightarrow \pi^0 \pi^+ \pi^-} &= -\frac{m_1^2}{3\sqrt{3}f^2} \left(1 + \frac{4c_1}{f_\pi^2} \rho\right) \left(1 + \frac{3(s-s_0)}{m_\eta^2 - m_{\pi^0}^2}\right) + \sin \theta^{(0)} \mathcal{M}_{\eta \rightarrow \pi^0 \pi^+ \pi^-}^{(4)\text{vac}} \\ &+ \left\{ -\frac{s-s_0}{f^2} \frac{1}{m_\eta^2 - m_{\pi^0}^2} \left(\frac{g_A^2 m_\eta^2}{4\sqrt{3}f^2} + \frac{2c_5 m_\pi^2}{\sqrt{3}f^2} \right) + \frac{g_A^2}{48\sqrt{3}f^4} (m_\eta - 3E_{\pi^0}) - \frac{2c_5 m_\pi^2}{3\sqrt{3}f^4} \right\} \delta\rho \\ &- \frac{m_1^2/\sqrt{3}}{m_\eta^2 - m_\pi^2} \left(\frac{2(c_2 - \frac{g_A^2}{8m_N})}{f^4} \rho \left\{ (m_\eta - E_{\pi^0})^2 - \frac{m_\eta^2 + E_{\pi^0}^2 + E_{\pi^+}^2 + E_{\pi^-}^2}{3} \right\} + \frac{2c_3 \rho}{f^4} (s-s_0) \right). \end{aligned} \quad (1)$$

- P. 13 and 14: Accordingly, Fig. 5 in P. 13 and Fig. 7 in P. 14 are replaced with Figs. 1 and 2, below. The added terms are found to make about 10 percent changes at most. The respective figure captions and the main conclusions are not altered.

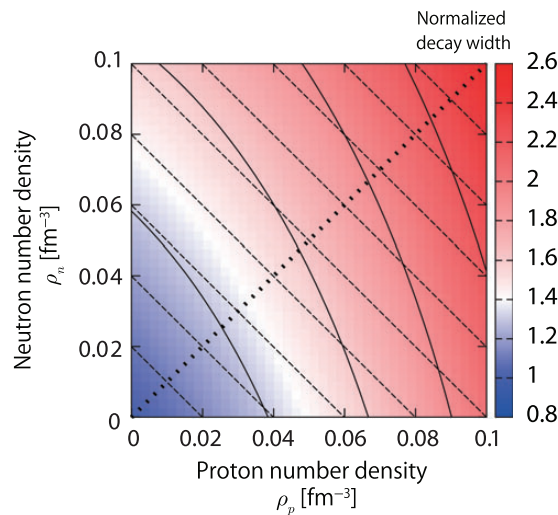


Fig. 1.

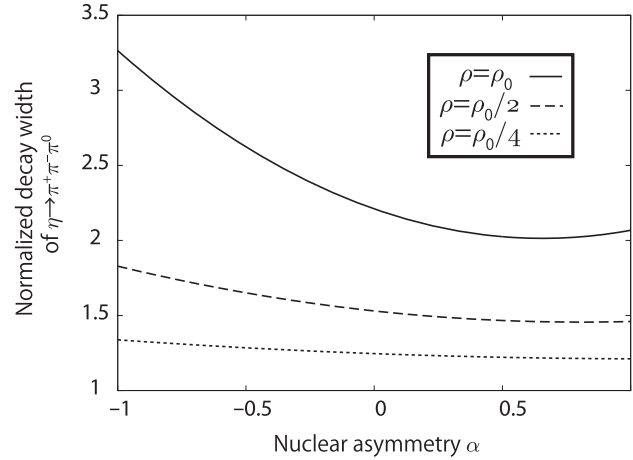


Fig. 2.

- P. 12 and 13: From Eq. (45) to (49), the overall prefactor $3!$ coming from the combinatorics of the final state three π^0 should be multiplied.
- P. 13: In accordance with the correction of Eq. (49), the third and fourth terms in the second line of Eq. (50) should be multiplied by the factor $3!$.
- P. 16: The phrase “in terms of $\dots$ decay constant f^{*} ” just above Eq. (53) should be replaced by “in terms of the in-medium quark condensate $\langle \bar{q}q \rangle_\rho$ ”.
- P. 16: Due to the change of the Eq. (43), Eq. (53) should read

$$\begin{aligned}
& \mathcal{M}_{\eta \rightarrow \pi^0 \pi^+ \pi^-} \\
&= -\frac{m_1^2}{3\sqrt{3}f^2} \left(1 - \frac{\sigma_{\pi N \rho}}{f^2 m_\pi^2}\right) \left(1 + \frac{3(s-s_0)}{m_\eta^2 - m_{\pi^0}^2}\right) + \sin \theta^{(0)} \mathcal{M}_{\eta \rightarrow \pi^0 \pi^+ \pi^-}^{(4)\text{vac}} \\
&+ \left\{ -\frac{s-s_0}{f^2} \frac{1}{m_\eta^2 - m_{\pi^0}^2} \left(\frac{g_A^2 m_\eta^2}{4\sqrt{3}f^2} + \frac{2c_5 m_\pi^2}{\sqrt{3}f^2} \right) + \frac{g_A^2}{48\sqrt{3}f^4} (m_\eta - 3E_{\pi^0}) - \frac{2c_5 m_\pi^2}{3\sqrt{3}f^4} \right\} \delta\rho \\
&- \frac{m_1^2/\sqrt{3}}{m_\eta^2 - m_\pi^2} \left(\frac{2\left(c_2 - \frac{g_A^2}{8m_N}\right)\rho}{f^4} \left\{ (m_\eta - E_{\pi^0})^2 - \frac{m_\eta^2 + E_{\pi^0}^2 + E_{\pi^+}^2 + E_{\pi^-}^2}{3} \right\} + \frac{2c_3\rho}{f^4} (s-s_0) \right) \\
&= -\frac{m_1^2}{3\sqrt{3}f^2} \frac{\langle \bar{q}q \rangle_\rho}{\langle \bar{q}q \rangle_{\rho=0}} \left(1 + \frac{3(s-s_0)}{m_\eta^2 - m_{\pi^0}^2}\right) + \sin \theta^{(0)} \mathcal{M}_{\eta \rightarrow \pi^0 \pi^+ \pi^-}^{(4)\text{vac}} \\
&+ \left\{ -\frac{s-s_0}{f^2} \frac{1}{m_\eta^2 - m_{\pi^0}^2} \left(\frac{g_A^2 m_\eta^2}{4\sqrt{3}f^2} + \frac{2c_5 m_\pi^2}{\sqrt{3}f^2} \right) + \frac{g_A^2}{48\sqrt{3}f^4} (m_\eta - 3E_{\pi^0}) - \frac{2c_5 m_\pi^2}{3\sqrt{3}f^4} \right\} \delta\rho \\
&- \frac{m_1^2/\sqrt{3}}{m_\eta^2 - m_\pi^2} \left(\frac{2\left(c_2 - \frac{g_A^2}{8m_N}\right)\rho}{f^4} \left\{ (m_\eta - E_{\pi^0})^2 - \frac{m_\eta^2 + E_{\pi^0}^2 + E_{\pi^+}^2 + E_{\pi^-}^2}{3} \right\} + \frac{2c_3\rho}{f^4} (s-s_0) \right). \tag{2}
\end{aligned}$$

- P. 14: Figures 6 and 8 should be replaced by Figs. 3 and 4, respectively.
- P. 15: Figures 9 and 10 should be replaced by Figs. 5 and 6, respectively.
- P. 16: The words beginning from “where $f^{*2} = f^2 \left(1 - \frac{\sigma_{\pi N \rho}}{f^2 m_\pi^2}\right)$.” just below Eq. (53) to “the pion decay constant⁴.” the fourth line below Eq. (53) should be removed.
- P. 17: The word “slightly” appearing at the fourth line of the third paragraph of Sect. 5 should be removed.

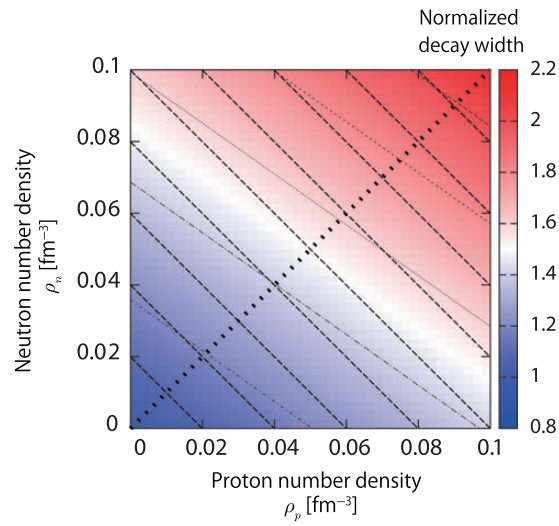


Fig. 3.

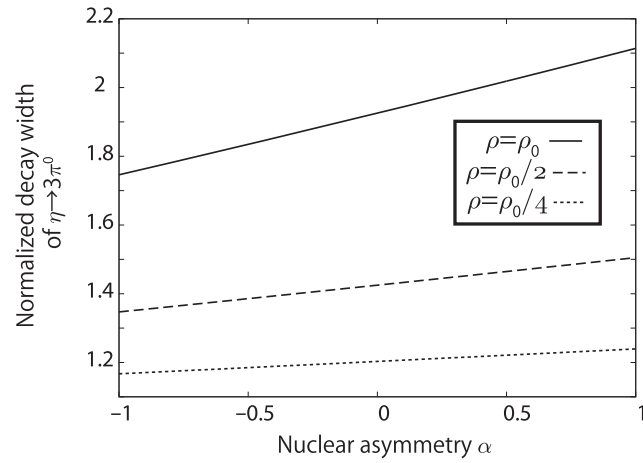


Fig. 4.

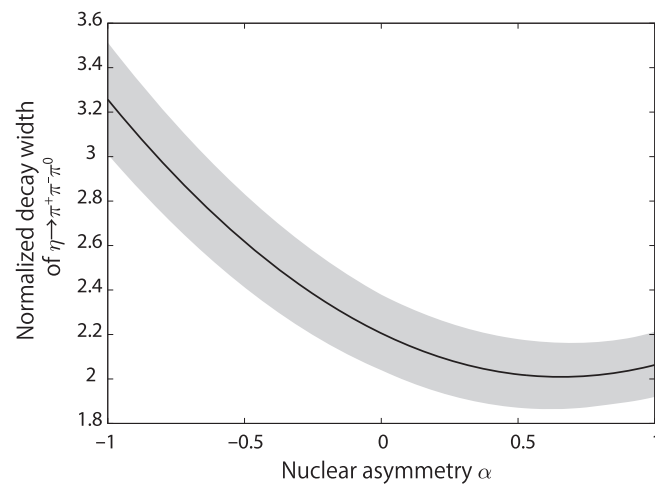
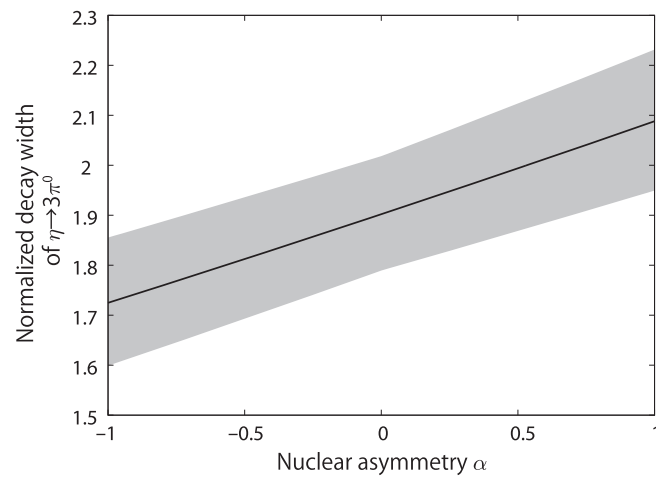


Fig. 5.

**Fig. 6.**